CHEMICAL MARKETS

RUPERT C. WATSON
Managing Editor

WILLIAMS HAYNES, Publisher

ELMER F. SHEETS
Assistant Editor

VOLUME XXIII | ESTABLISHED 1914 | NUMBER 3

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CHEMICAL MARKETS, INC., Publishers

Publication Office, 28 Renne Ave., Pittsfield, Mass. Editorial and General Office, 25 Spruce St. New York City

WILLIAMS HAYNES, PRESIDENT; ROBERT STRANGE, SECRETARY; D. O. HAYNES, JR., TREASURER

PUBLISHED ON THE TENTH DAY OF EACH MONTH AT PITTSFIELD, MASS. SUBSCRIPTION TWO DOLLARS A YEAR, IN ADVANCE, POSTPAID TO ALL COUNTRIES; SINGLE COPIES, CURRENT ISSUE, 25 CENTS; BACK COPIES, 50 CENTS EACH. NOTICE OF THREE WEEKS IS NECESSARY TO CHANGE SUBSCRIBER'S ADDRESS AND IN WRITING PLEASE GIVE BOTH THE OLD AND NEW ADDRESSES. PRINTED FOR THE PUBLISHERS BY THE SUN PRINTING COMPANY, PITTSFIELD, MASS. ENTERED AS SECOND CLASS MATTER, JANUARY 1, 1928 AT THE POST OFFICE AT PITTSFIELD, MASS., UNDER THE ACT OF MARCH 3, 1879.

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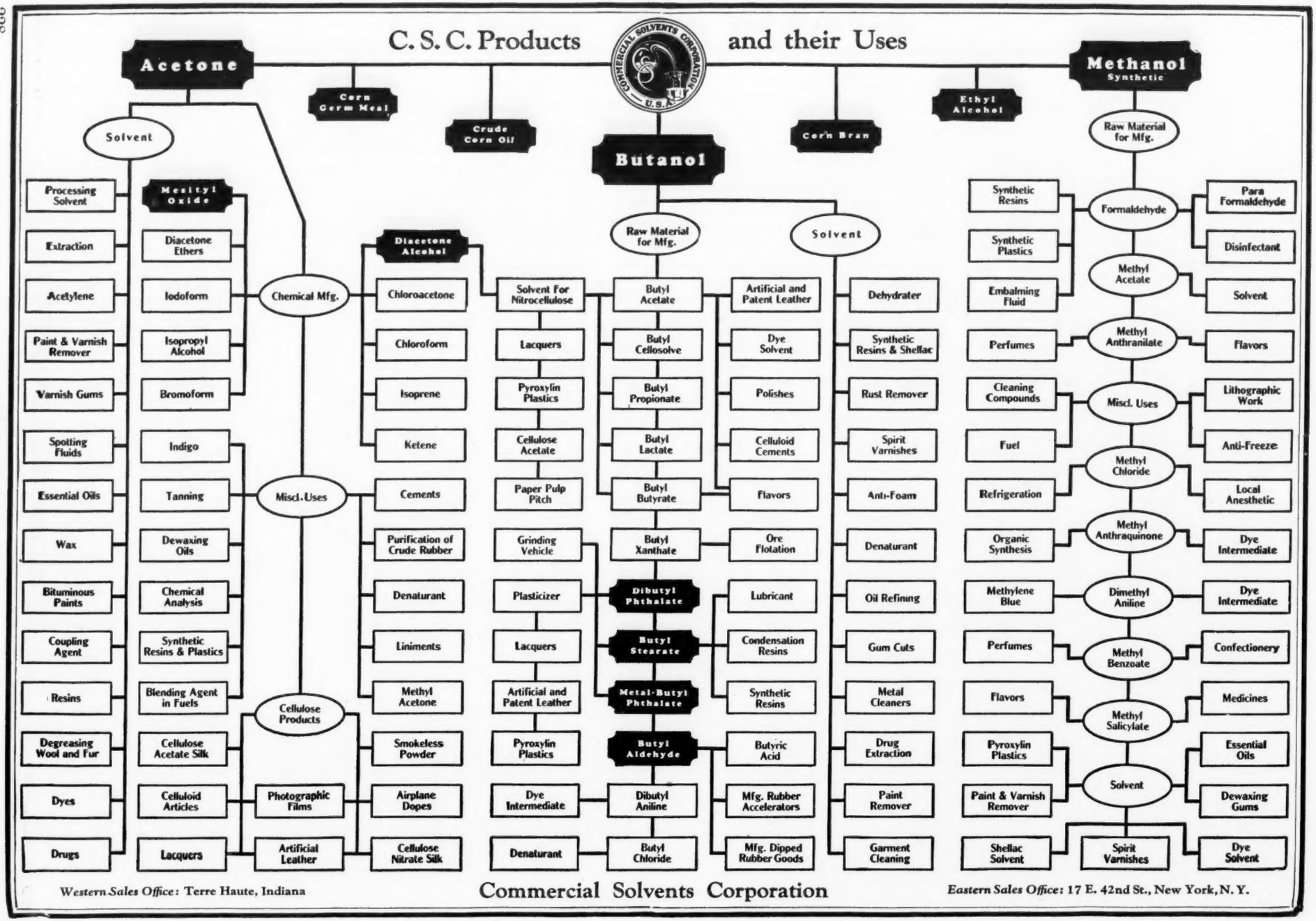
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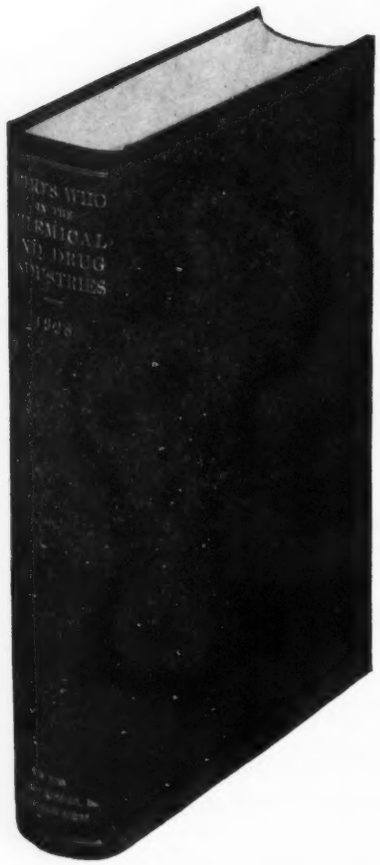

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BOYLSTON, Arthur Clarence, vice president and general manager, Mallinckrodt Chemical Works. Born, Milton, Mass., 23 June 1882; mar., Isabel Gray, St. Louis, 13 June 1920; educat., Harvard Univ., A.B., 1903; A.M., 1906, With Mallinckrodt Chem. Wks., as analytical, res. chem., fact. supt., gen. mgr., since 1908. Memb., Univ. Club (St. Louis), Amer. Chem. Soc. (councillor), Amer. Assn. Adv. Sci. (Fellow), Amer. Inst. Chem. Engr. Address: Mallinckrodt Chem. Wks., 3600 N. 2 St., St. Louis, Mo.

BRADLEY, Robert Ballantine, president, Hans Hinrichs Chemical Corp. Born, Newark, N. J., 20 Dec. 1886; mar., Phyllis Rich, Boston, 25 Oct. 1924; children, 1 dau.; educat., Harvard Univ. (chem.) B.S., 1908. P. Ballantine & Sons, Newark, pur. agt., foreign rep., 1908-21, dir. to date; Hans Hinrichs Chem. Corp., vice pres., 1921, pres. 1924 to date. Capt. 313th M. G., 80th Div. A. E. F., 1917-19. Memb., Amer. Chem. Soc. Hobby: books. Address: Hans Hinrichs Chemical Corp., 2 Stone St., New York City.

BRADLEY, Robert S., chairman of the Board, The American Agricultural Chemical Co. Born, Meriden, Conn., 22 Feb. 1855; mar., Leslie Newell, (dec.), Arlington, Mass., 15 Dec. 1881, mar. 2d, Florence S. Johnson, New York, 19 Jan. 1927; children, 1 son (dec.), 3 daus.; educat., Harvard, A.B., 1876. Bradley Fertilizer Co., Boston, treas., 1878, pres., 1895-99. Clubs: Union, D. T. A. & Recess, Union (Boston), Myopia Hunt (Hamilton, Mass.), Country (Manch ton), U dress: Co., 42 City an

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Fanto & Co., Vienna, Austria, plant mgr.; Girard & Co., Inc., Mount Vernon, N. Y., chic. chem.; McKesson & Robbins, Inc., Bridgeport, Conn., chief chem. Address: Bridgeport, Conn.

FARGO, Francis Miller, Jr., vice pres., Calco Chemical Co. Born, Chgo. 30 Oct. 1886; mar., Lillian Foster, Evanston, Ill., Oct. 1914; educat., Germantown Acad., Milwaukee Acad., Yale Univ., A.B., 1906. Jas. B. Clow, sales dept.; Cott-a-Lap Co., Somerville, N. J., sales mgr.; Calco Chem. Co., vice pres.; Calco Chem. Co., Cott-a-Lap Co., dir. Clubs: Yale, Drug & Chem., Chemists' (N.Y.), Nantucket Yacht, Plainfield Country. Hobby: golf. Address: Calco Chemical Co., Bound Brook, N. J.

FARLEIGH, Henry S., manager Merchants Chemical Co. Born, Brooklyn, N. Y., 6 Aug. 1878; mar., Lelia Eaton, Natick, Mass., 1906; educat., pub. Schls., N. Y., City Coll., N. Y., B. A., 1892. Edward Hills' Sons & Co., 1892, working up to asst. sales mgr. under Eugene Taylor; Hooker Electro Co., sales mgr., 1915-18; E. F. Drew & Co., vice-pres. and after failure appt. co-receiver, 1918-21; began bus. on own acct. as chem. bkr., Sept. 1921; with Robt. N. Ball, formed firm of Farleigh & Ball, 1923. Mgr. Merchants Chem. Co., since 1918. Clubs: Mason (Chpt.), Drug & Chem., Westside, Upper Montclair. Hobbies: "too numerous to mention." Address: Merchants, Chem. Co. 1300 S. Canal St., Chicago.

FARNUM, Walter Willis, chief chemist, Naval Powder Factory. Born, Brockton, Mass., 6 Feb. 1882; educat., Harvard, A.B., 1904; A.M. 1905 Naval Torpedo Sta., Newport, R. I.; Naval Powder Factory, Indian Head, Md. Memb., Amer. Chem. Soc., Amer, Assn. Adv. Sci., Masons. Clubs: Harvard, Manor Golf (Washington). Hobbies: golf, cruising. Address: Naval Powder Factory, Indian Head, Md.

FARRAND, Jacob S., Jr., vice president and secretary, Farrand, Williams & Clark. Born, 11 June 1857; educat., high schl. Farrand, Williams & Clark, vice-pres. and secy. First Natl. Bk., dir. Clubs: Lockmoor-Country, Old Club, Detroit Curling, Colonial Wars, S. A. R., Bankers, Detroit Auto. Hobby: golf. Address: Farrand, Williams & Clark, Detroit, Mich.

FAUSER, Erwin F., manager, New York branch, Frederick Stearns & Co. Born, Detroit, Mich., 12 June 1896; educat., Detroit High. Nyal Co., Detroit, 1913-25; Detroit adv. mgr., asst. secy., 1925 to date; Frederick Stearns & Co., mgr. N. Y. branch, Aug. 1927; to Sidney, Australia, for F. Stearns & Co. U. S. Navy during war. Memb., Palestine Lodge, F. & A. M. Clubs: Detroit, Masonic Country. Hobby: golf. Address: Fredk. Stearns & Co., 129 Maiden Lane, New York City.

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FAWKES, Charles E., manager, Pyroxylin Products, Inc. Born, Dubuque, Iowa, 28 July 1900; mar., Beth Grover, Kenosha, Wisc., 22 Feb. 1922; children, 1; educat., Wisconsin, B.S., 1921. Memb., Amer. Chem. Soc. Address: Pyroxylin Products Co., 1800 West 74th Place, Chicago, Ill.

FAXON, Frank Thomas, vice president, Faxon & Gallagher Drug Co. Born, Lawrence, Kan., 7 Oct. 1874; mar., Aloysia Donohue, Kansas City, 24 Jan. 1910; children, 1 son, 3 daus.; educat., Kansas City Ward and high schls., Univ. Mich. Woodward, Faxon & Co., sundries dept., 1894; Faxon & Gallagher, mgr. sundries dept., 1907; asst. secy., 1908; Faxon & Gallagher Drug Co., secy., 1912; vice pres., 1923 to date. Westport Natl. Military Park Assn., treas; Swope Settlement, sec. & dir.; Druggists Supply Corp., dir. Memb., Cham. Comm., Sons Revolution, Phi Delta Theta. Clubs: Kansas City Country, University, Kansas City, Old Colony, City Knife & Fork, Rock Hill Tennis, Automobile. Hobbies: books, tennis. Address: Faxon & Gallagher Drug Co., 8th & Broadway, Kansas City, Mo.

FAXON, Henry Darlington, president, Faxon & Gallagher Drug Company. Born, Lawrence, Kan., 2 Jan. 1873; mar., Sarah Peake Askew, Denver, Colo., 6 Apr. 1898; children, 2 daus.; educat., Stanford,

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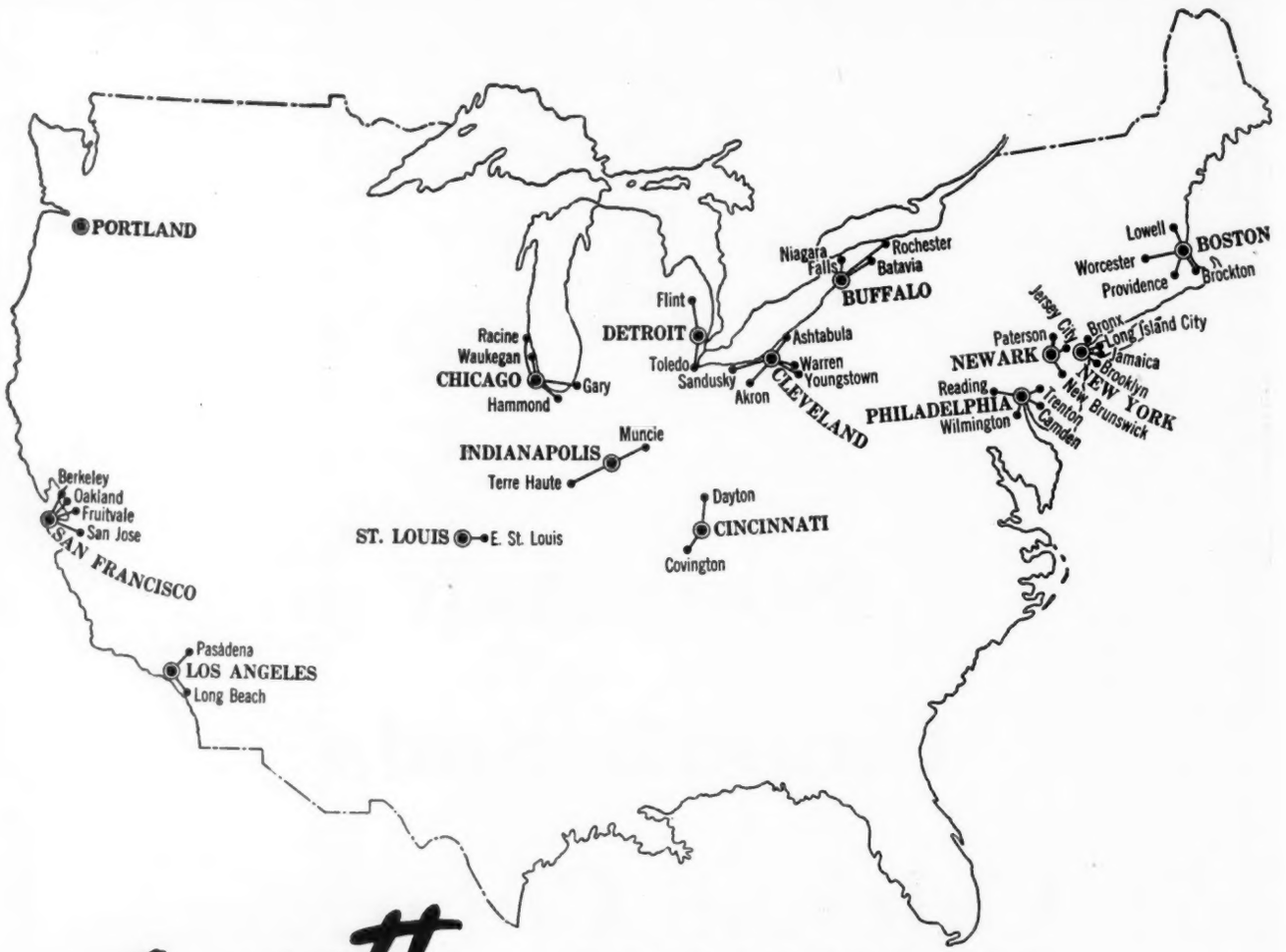

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CHEMICAL MARKETS

VOL. XXIII. SEPTEMBER, 1928 No. 3.

Chemical Economics

As our chemical companies increase in size, through growth or consolidation, they bring to the men of the industry mixed blessings. Any industrial field occupied by big corporations is stony ground for the small enterprise; and there is an unpleasant, if not dangerous, tendency thus to curtail personal initiative and rugged independence of thought and action. Against this, it must be admitted that the big corporation open up big opportunities. They supply power and machinery for signally great accomplishment by men of notable capabilities.

THE handling of these titanic industrial engines require groups of administrative executives in whom must be combined a high degree of experience and foresight, technical knowledge, commercial judgment, and financial acumen. It is not from choice that our larger chemical companies have drafted many executives from the banking and engineering professions, from the automobile and machine tool industry, from department stores, from advertising, from the college faculties of economics and history, from everywhere, it sometimes seems, except from among chemists. It is because the successful executive is a rarity. Wherever found he possesses characteristics which may be applied, with slight adaptations, to chemical management. Ten years ago doleful prophets forecast dreadful ruin for the pioneers who undertook executive work without chemical experience. There were some dazzling individual failures; but there have been conspicuous triumphs; and leading companies have justified this personnel policy.

BUT plainly this is not the ideal condition. The chemically trained executive always has a long, long handicap over his rival from a bank or a machine shop. We do not believe that sound chemistry and good business are incompatible. We suspect strongly that as many potential executives are to be found in the laboratory as in the office. Therefore, we deplore that silly mental snobbery, displayed alike by minor executives and little chemists. Along with a sincere devotion to chemical science we want to see a wholesome respect for chemical industry taught young students. Chemical economics deserves a better place in our college courses, and we rejoice that the Chemical Society set aside time, at its Swamscott meeting, for a discussion by business leaders of the economics of recent technical developments in nitrogen.

A Changing Viewpoint

Labor is not usually one of the major problems of the chemical executive as this item of cost is really insignificant in the production of chemicals. Nevertheless no cost factor is unimportant and our chemical leaders have therefore good reason to consider carefully the changing attitude on the part of the workman towards his work and his company.

A most significant indication is the development in the political campaign that points plainly to a better appreciation on the part of the wage earner that his welfare is intimately bound up with the success of industrial America. Union leaders who support a protective tariff policy join hands in a more than figurative way with the far-sighted industrialists who is beginning more and more to appreciate that the general basis of prosperity in this country rests very largely upon the high wage scale now being paid. The idea that the interests of labor and capital are identical was but a very short time ago thought to be a theoretical dream. Such changed attitudes show very definitely that it has become a practical reality.

Nor is this movement confined to the United States. The British Trade Union Congress by the enormous majority of 3,075,000 votes against 566,000 have endorsed the policy of industrial co-operation as exemplified by the conferences initiated by Sir Alfred Mond. A few "die-hards" among the labor leaders, notably "Emperor" Cook, fought this resolution violently and vigorously on the ground that the trade union exists for the sole purpose, not of co-operating with, but of fighting against capitalism, and that it is impossible to reconcile the inherent antagonism between employer and employee. The result of the vote is the best answer to their claim.

Control of Health Hazards

The problem of health hazard control in the chemical and allied industries is not a new one. However, due to considerable pressure which has been brought to bear by Labor Commissions in various communities, interest has been revived during the past few months.

There is no debating the fact that any movement which has as its objective the further safeguarding of labor should be given every encouragement, but by the same token there is no justification in the contention that the manufacturer of these commodities which come under the jurisdiction of health hazard committees is guilty until proven innocent. While there is no insinuation that such is the case the preliminary proceedings in many labor investigations seem based on this principle.

Taken by and large, the employees are not "out" to get all that the traffic will bear from their employees, without a great deal of thought and subsequent action toward the protection of their employees health. If for no other than selfish reasons, every manufacturer abhors the thought of lost time caused by physical incapacitation and its attendant publicity and if afforded the opportunity will take every precaution to avoid it.

Many manufacturers feel that this phase of the question is not given rightful consideration and is one reason for the enactment of unnecessary legislation. There is no insinuation that hearings, once instigated, are not fairly conducted for such is not the case, but employers do dislike being cast in the role of the villain and put on the defensive in practically every controversy which comes up for consideration.

In this issue, Dr. M. H. Haertel outlines seven general principles, which if followed would eliminate a great deal of friction. This question of health hazard control has long ceased to be a matter for local jurisdiction and it does seem that a central body functioning under the auspices of a Governmental department would go a long way toward the solution of the problem.

"Dog Days" No More

If only for the reason that the course of business during the past two months did not follow in the footsteps of preceding off season periods, a comment on business conditions during the Summer months of 1928 is not untimely.

Through the early months of the year we all heard dire predictions that the Summer months of Presidential Year were indeed the dog days of each four years business span. Those who were fortunately situated looked forward to a long Summer of fishing at the seashore or golf in the mountains, minus the usually attendant fear of how much business John Jones was pocketing in the interim.

Unfortunately, or fortunately, according to the individual viewpoint as to how the Summer should be spent, extended vacations were cast into the discard by the odd manner in which sales refused to lie down and play dead. Many were the theories advanced as to just why there was no marked slump in business, the soundest of which was, when a buyer needs supplies he buys them, whether it be Presidential Year, Christmas Eve or inventory period. This version of trade conditions is necessarily one from impressions gathered in New York, but what opinions have come to our attention from other sections of the country are a repetition of our findings in the Metropolitan district.

Columns could be written—and justly so—on the optimistic feeling which now prevails among sales executives as a result of the manner in which business has held up during July and August. Of course, some recessions were noted from the months of April, May and June, but in most cases shipments for the period were in excess of any previous Summer in the individual company's history.

In light of what has transpired during July and August, the Presidential Year myth has been successfully surmounted for another four years, at least.

Selecting a Plant Site

The selection of a proper plant site is undoubtedly the making or breaking of many business enterprises. Yet, how much constructive thought does the average concern give to the multiple problems which should be thrashed out before a decision is arrived at?

Only too often is a manufacturer lured to a location—sometimes against better judgment—by an over zealous civic organization with promises of low taxes and cheap labor, only to find that these advantages are more than offset by any number of unforseen difficulties which were not brought to the plant owner's attention.

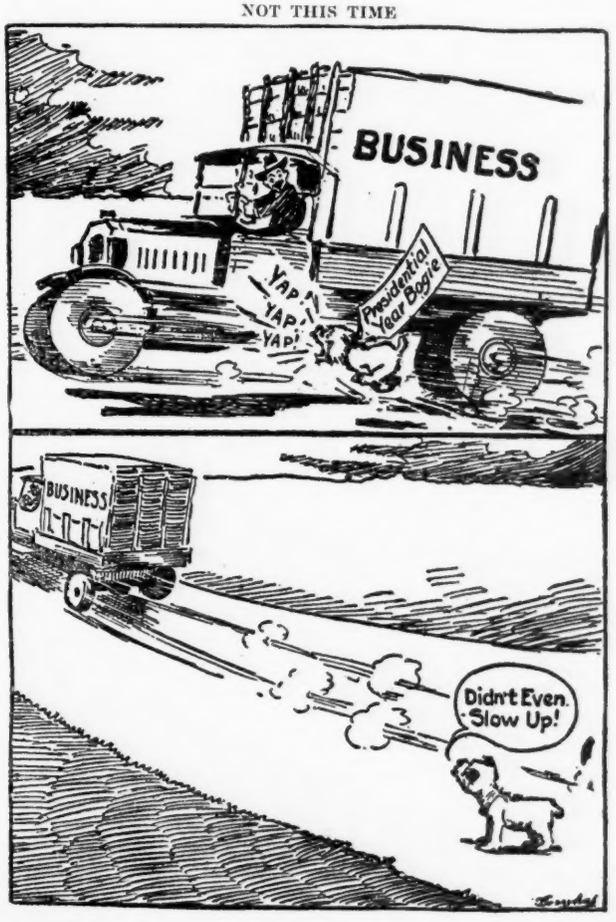
The cardinal requirements of convenience to the raw material source of supply and facilities for shipment to the most lucrative markets are always taken into consideration, but should a manufacturer be satisfied with only these attractions. What about living conditions for employees? If it is necessary to import labor for your plant, will they be satisfied to settle permanently in the town or city of your choosing? How many railroads are located within reasonable shipping distance of your factory site?

These are but a few of the perplexing problems which must be settled before a city, suburban or small town location is decided on. Each of these types of location has its advantages, too numerous to enumerate. It is sufficient to say that a very careful analysis of conditions surrounding your prospective plant site will never be regretted.

The American Chemical Society and Director Frank C. Whitmore are to be congratulated on the success of the Second Institute of Chemistry, which came to a close on August 18 at Northwestern University.

Many chemists and scientists of national and international repute were among the contributors to the sessions and it is a tribute to the endeavors of the Society that these men, realizing the good that accrues from these meetings, were induced to appear. It is also a great source of satisfaction to note the columns of space which were devoted to the meeting of the country's leading daily papers—a tribute to the advance made by chemistry since the days of the War.

NOT THIS TIME



They Say:——

'Let the buyer beware' must take on a new meaning in business to-day. The buyer has just as much of a duty toward the seller as the seller has to the buyer. It is the duty of fair dealing. And it is also a selfish duty because unless the supplying industry is able to continue efficient and economical production at a reasonable profit, the consuming industries may find themselves without an adequate, continuous and economical supply of essential materials.—*O. H. Cheney.*

Eight selected major manufacturing industries in the United States, using on an average one and a half as much horse power per wage earner employed as the same industries in Great Britain turn out, largely as a result of this greater use of power, from two and a half to three times as much production per wage earner employed.—*National Industrial Conference Board.*

The nation's business during the first half of 1928 exhibited a continuance of the activity and progress which has now lasted for a sufficient number of years to mark a general stability unparalleled in the economic history of the United States or any other important industrial country.— *U. S. Department of Commerce.*

Cut off a country from the manufacture of high explosives, listing coal tar, hydrocarbons, cotton, glycerine, sulfuric acid and nitric acid as the essentials, and be she as great intellectually as ancient Greece, she will not be a great power according to the standards of our times.—*Sir James Irvine.*

The chemical industry has made very favorable progress during the first half of 1928. The total earnings of eleven companies were 13 per cent. larger than in the same period last year, while only two concerns reported smaller income.—*National Bank of Commerce Monthly.*

Indications on the whole suggest a rising trend in money rates, which may result in serious stringency before the end of September unless the much needed liquidation soon occurs.—*Dr. Lewis H. Haney, Bureau of Business Research, N. Y. U.*

After all it is the financial stability of a concern that's the real proof of the soundness of its policies.—*Bulls Eye.*

Wage incentives to be successful requires co-operation between operative and employer.—*Frederick A. Hayes.*

This is a chemical age, and in it things are moving so fast that little attention can be paid to experiences that are from three to five years old. In the field of synthetic ammonia it seems that this time limit can safely be placed at from six to twelve months and it is safe to say that no two installations are or have been identical.—*E. M. Allen.*

We lay it down as a cardinal fact that we are the guardians of national safety in the way of production of chemical products, that we are the guardians of the development of the chemical industry in this country and Europe.—*Sir Alfred Mond.*

Ten Years Ago

From "Drug & Chemical Markets", September 1918

War Department plans establishment of new plant for manufacturing gas bombs, at Saltville, Va., at an initial cost of about $250,000. Mathieson Alkali Works are to supply the soda ash and other alkali products for the operation of this section.

Federal Trade Commission has ordered the McCloskey Varnish Co., Philadelphia; The Acme White Lead & Color Works, Detroit; and the Kansas City Printing Ink Co., Kansas City, to close the practice of commercial bribery.

A plant under Government supervision is to be established at Clinchfield, Va. for the purpose of recovering by-products from bituminous coal by a new process of low temperature distillation.

Barrett Co., Jersey City, approves the consolidation of the subsidiary companies for the reason that material savings will be effected in all departments, particularly in respect to taxation.

Entire construction of the air nitrate plant near Toledo, Ohio has been taken over by the Government, since it is felt that it can build more cheaply and quickly than a private agency.

British Dyes, Ltd., at shareholders' meeting, voted in favor of amalgamation with Levinstein, Ltd., of Manchester, and appoint committee to arrange details; opposing directors resign.

American Dyestuffs Manufacturers' Association hold an important meeting in New York at which a number of resolutions of importance to the dyestuffs industry are adopted.

Chemical Exposition, to be held at the Grand Central Palace, will feature more than 350 exhibits representing every field of industrial chemistry and chemical manufacture.

War Revenue Bill, amounting to $8,000,000,000, passes the House. Material changes are expected, with revisions raising the tax rates, when the Bill reaches the Senate.

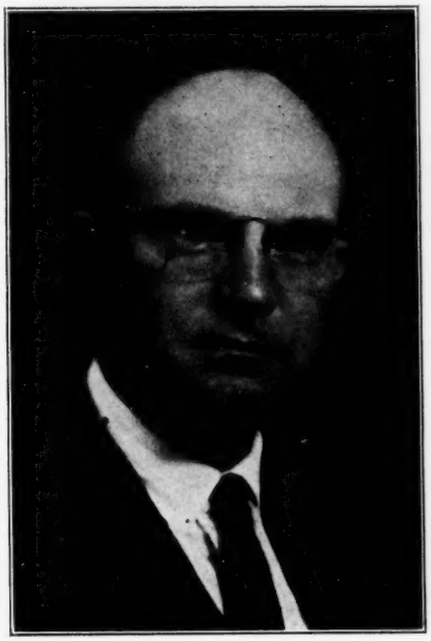
Union Dye & Chemical Co. takes over the plant of the Federal Dyestuff & Chemical Corp., under Court order, new officers being elected.

G. Siegel & Co., Rosebank, S. I., is sold by A. Mitchell Palmer, Alien Enemy Custodian, to Coffin & Co., investment brokers, for $509,600.

Nobody denies the need for adequate legislation safeguarding the health of industrial workers. But first, there must be an unprejudiced, definite, scientific study of all chemical health hazards under our rapidly changing industrial conditions. This article suggests a constructive program as a basis for making such investigations.

HEALTH HAZARD CONTROL

By M. H. Haertel



DUE to frequent changes in material and processes in the chemical industry, working conditions as they affect the health of the personnel are in a continuous state of flux. Jobs that a decade ago gave little cause for concern may to-day call for special precautions. On the other hand, some of the hazards of the past have practically disappeared, and regulations and restrictions that were formerly necessary may now be merely an obstruction to efficient operation without actually helping in the safeguarding of life and health. The welfare of the workman demands that additional protection be given to cope with newly developed hazards. Speed and economy of operation require that obsolete and now needless regulations be abandoned.

There is little likelihood that necessary new health measures will be long delayed. Our systems for registering industrial accidents and poisoning provide for comprehensive and prompt reports; the workmen are alive to the importance of self protection, and will inform the management of new dangers; labor unions are solicitous for the welfare of their members; state and local governmental bureaus and health officers are alert. In fact, industrial executives are often faced with unreasonable, if not hysterical proposals and are forced into the disagreeable position of opposing suggestions that, on the surface at any rate, have a purely humanitarian motive.

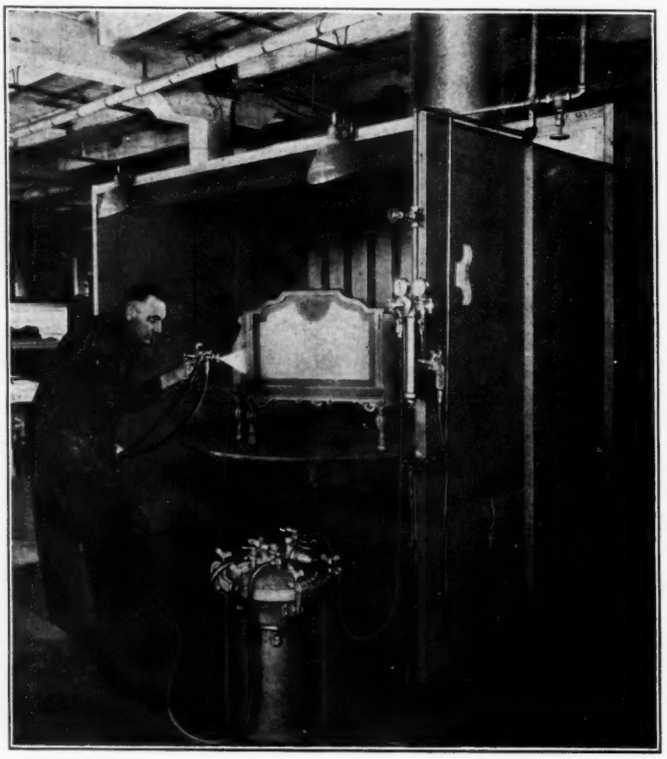
Getting new regulations is easy; it is a difficult matter to eliminate those that are obsolete or worthless. A regulation once established has all the authority and prestige of law, and we know that it is almost impossible to erase anything from our statute books. There is an important difference, however, between a law and an industrial rule. The former can, by common consent, be tacitly ignored; factory regulations are so definitely personal in their application to the individual that they cannot be overlooked. There is always at least one aggrieved workman, and everybody is familiar with the inspector whose conscientiousness is not tempered by good judgment and competent technical knowledge.

It is unfortunate, but after all only natural, that in committee discussions of this subject opinion is generally divided on the basis of employer and employee. The former is conservative; he dislikes a consideration of his manufacturing processes from a point of view other than that of operating efficiency. It is his object to procure maximum production at minimum cost and in the shortest time. He is also aware that, if he observes restrictive regulations that are ignored by his competitor, his salesmen will be under a serious handicap. On the other hand, he feels the same humanitarian impulses that stir the professional man, the merchant, the social worker. He has a certain degree of selfishness in his make-up, but no more so than other groups. He finds no satisfaction in profits gained at the cost of the health of others, be they workmen or customers. That is, he is the average citizen, who wants to go his own way, undisturbed and undisturbing.

But aside from the humanitarian aspect, his social duty to his fellow-man, he has long ago learned that there is an actual monetary profit in treating his workmen "right". A reasonably contented, comfortable employee is worth real money. Satisfaction with working conditions cuts down labor turnover, one of his most costly items. Good health means less

time out, with correspondingly more intensive operation of elaborate equipment.

Long ago he learned that the minimum pay—a 'living' wage—was more costly in the long run than a 'saving' wage. His interest in agreeable surroundings for the laborer is evidenced not only by factory shower baths and lunch rooms, where such institutions are indicated, but also by his hearty support of municipal enterprises, such as, public libraries, parks with their band concerts and bathing beaches. We should not want to attribute the existence of these conveniences and luxuries entirely, or even primarily, to a self-seeking spirit on the part of the heaviest taxpayers; there is no doubt, however, that in part this willing expenditure can be traced to the observation that it all makes for contented minds and more efficient labor.



Workman using spray gun in furniture factory, showing specially constructed cage with ventilator at top to expel and prevent broadcasting of fumes.

Whatever the motive that inspires this expenditure, it is unreasonable to suppose that the man who approves it, who must dig deep into his own pocket to pay the bills incurred thereby, will be entirely recalcitrant in a discussion of protective regulations in his own factory. He wants to feel that his working force is well cared for and he realizes that it pays. On the other hand, he insists that all proposals be the result of careful thought, and that they should tend to accomplish an actual benefit, whether the benefit be concrete and can be expressed in statistics, or whether it be an intangible benefit that cannot be reduced to figures and sharply defined in a report. Above all, he insists that the proposal be genuine, and not a subterfuge for some other object.

On account of the widely varying classes of labor, their attitude is not so easily defined. We find the great mass of unskilled labor, men and women who plod along at their appointed tasks from day to day, content to do what they are told to do in the manner prescribed. If their work presents no clearly visible, tangible threat to life or limb, they are not likely to ask questions. They are willing to go where they are told to go, in mute confidence that the boss knows what he is about. It is sufficient for them that they finish their day physically intact and assured of their wage. This indifference, or rather ignorance, does not absolve executives or government from responsibility. On the contrary, their very helplessness imposes on those more fortunately situated the additional burden of thinking for them, of detecting hidden menaces and guarding against unseen hazards. Moreover, protection must be automatic and not depend on the active co-operation of the employee. No reliance can be placed on such devices as masks and goggles, for the man who does not realize the purpose will not submit to the incidental nuisance and discomfort.

A different picture is presented by the workman who has had a technical training—even of the most elementary sort. He has heard and read enough to realize the danger lurking in invisible vapor, the hazards of insufficient ventilation. He knows that washing the face and hands before touching food is not merely an aesthetic gratification, but an essential safeguard. In a rudimentary way, he can interpret the meaning of a dull headache, excessive salivary activity, loss of appetite or abnormal lassitude at the end of the day's work. In fact, he is keenly interested in such danger signs and will be alert to seek their cause in his occupational surroundings. If he notes anything suspicious, word will sooner or later find its way to union officials or the state labor board. He is articulate and will find means to express himself. He cannot be justly criticized for demanding due consideration of all threatening factors.

Insalubrious plant conditions are often remedied by consultation between the maturer employees on the one hand and the executives on the other. If there is a plant physician, he might serve as the go-between. This individual action is not always feasible, since the expense of such correction may be considerable and puts the manufacturer at a disadvantage in competition. Moreover, the two interested parties may not arrive at a mutually satisfactory solution. Group action is indicated. The medium is ordinarily a state labor functionary.

Probably every state—at any rate every state that is important industrially—has made provision for a commissioner whose duty it is, with the help of an advisory council, to promulgate rules and regulations

that will correct untoward factory conditions, and guard the health of workers. He collects the opinions of the laboring men, usually expressed through the labor union; of the employers, who select spokesmen from among their own group; of experts of various kinds. His functions are largely judicial, since he must weigh carefully all considerations advanced and decide what is right and reasonable and what is selfish and extreme. He is also an executive, for in his office usually center the enforcement activities. His responsibility is heavy; he is charged not only with the welfare of the laborer, but to a large extent with the economic development of his state. Should he be lax, health will suffer; on the other hand, extreme measures will drive manufacturing from his jurisdiction to a more favorable atmosphere. Above all, he must be impartial, resistant alike to the clamor of the paid agitator, whose job may depend on getting "results", and to the protests of the ultra-conservative or selfish manufacturer, who objects to interference with his operations.

It cannot be denied that many executives feel that the labor board is ordinarily in opposition to them and on the side of the laborer. At times, one even hears the imputation of unworthy motives. There would seem to be an adequate explanation of this situation.

Manufacturer Usually Defendant

In the early days of commissions, correction was badly needed. Had this not been the case, there would of course have been no commissions. It was the first duty to provide protection for the laborer and in no way necessary to look after the employer. Thus was established a control tradition. Moreover, when a manufacturer realizes the necessity for additional protection, he provides it on his own initiative, without first applying for an order. Proposals to the board ordinarily emanate from those interested only in the welfare of labor. In practically every discussion, the manufacturer is on the defensive, with labor appearing as the aggrieved party. It is natural for the commissioner, who hears only of the sins of omission and is not compelled to take note of the voluntary betterments, to develop a bias for the plaintiff. Added to this is the traditional conception of labor as the under dog who needs sympathy.

Despite these considerations, the employer as a rule eventually gets a fair and reasonable hearing. While unwise *proposals* are common enough, there are after all comparatively few regulations in force that did not have sufficient reason when promulgated.

The impression of a one-sided interest is strengthened by the name of the board or the title of the official. It would help if, instead of a commissioner of "labor" of a "labor" board, we had a commissioner of "industry" or a board on "industrial" affairs. This name would serve as a perpetual reminder of the double duty of the office, a duty to laborer and manufacturer alike.

While regulations ordinarily apply only to a restricted area, such as a state or a community, each one is potentially of national scope. If a situation in Pennsylvania needs correction, it is probably equally objectionable in Massachusetts. The organization or individual who has at heart the welfare of the Ohio workman is usually equally interested in his New Jersey comrade. Regulations are issued in printed form, and the various state officials exchange information. Every action may serve as precedent elsewhere. It is well for a manufacturer to be informed as to what is going on in distant states, even if he is not directly concerned.

Standard Working Conditions

The passing of time has established certain principles that are recognized by all. No one questions the necessity of guarding swiftly moving belts or cutting tools, such as saws, knives, and punches. Machinery that produces visible dust, as in wood-working and tool-grinding, is provided with exhaust ventilation that carries loose particles into the open air. These devices take care of obvious direct menaces. The necessity for adequate ventilation and sufficient toilet and lavatory provision is recognized as a matter of principle. There may be a divergence of opinion as to what constitutes adequacy, especially in regard to ventilation. However, these matters have been thoroughly studied, and the application of our knowledge to ordinary manufacturing conditions is practically a routine matter. The real difficulty comes in the regulation of unusual and new conditions.

No line of manufacturing presents so many puzzling problems as the chemical industries, where processes quickly become obsolete, and research establishes new methods.

Popular Fear of "Chemicals"

Popular psychology is in favor of rigid restriction. The very word "chemical" conjures up a feeling of dread. In olden times the chemist was a mystery man, who prepared potent drafts that could kill or cure. In the Medician period, the chemist was about as congenial a personage as the public executioner. Small wonder that, in the folkmind, which cannot be ignored even to-day, there is something mysterious about chemistry. The terrifying results of poisonous gases in the World War left indelible impressions that are not mollified by the cheerful assurance of the chemists that, in a few hours, some of our enormous plants can produce great quantities of this dreaded substance. If this change can be made at will with slight effort, if the border line between the toxic and the harmless is so finely drawn, isn't it natural to suppose that a slight accidental derangement can produce the same result? What is going on within these mysterious mixers and retorts, and what will happen should invisible vapors escape through a loose joint in the maze of pipes, or if a valve packing should become worn? After all, the medicine man is a

popular member of the tribe only in times of emergency.

It is a peculiarity of chemical hazards that they do not affect all men alike. Contact with a saw is disastrous to any one; there is no such thing as immunity to a flying belt. In contrast, exposure to the more common vapors may or may not be deleterious. Or half a dozen men in a given position, only one may be affected. Idiosyncracy plays its part, as it does in exposure to contagious diseases. It is not exactly true that one man's meat is another's poison. It has been demonstrated, however, that one man's poison may be neutral so far as other men are concerned. Thus a real problem confronts us. If a given process affects only a few operatives, and the symptoms are noticeable at an early stage, the sensitive ones can be shifted to other stations. But where is one to draw the line between operations that can be handled individually and those that call for general regulation? Here there will be honest differences of opinion that cannot be settled by reference to figures.

The symptoms are not always clearly defined. Blood derangements, digestive disturbances, skin eruptions, have many causes. Suspicion may be directed towards working conditions when, as a matter of fact, the real trouble lies outside of the plant.

Chemical Problems are New

Again, chemical problems are new. A quarter of a century ago, there was no real chemical industry in this country. The industry as we know it to-day is vitally different from that of even ten years ago. Facts observed at the beginning of this decade may have no bearing on current conditions. Consider the field of solvents and their application! Not only are there new solvents, entirely unknown a short time since, but the method of application has swiftly undergone revolutionary changes. How can we correlate our experience, as recorded in reports and statistics, with a consideration of conditions so new that there are no applicable data?

Laboratory experiments on animals are helpful, though it is not easy to simulate actual factory conditions. But these experiments take time and cost money. It is not equitable to throw this task exclusively on the manufacturer, especially if he is not convinced that there is good ground for the charges brought against his product. He feels that the burden of proof is on the proponent of the regulation. It surely is not in accordance with our sense of justice to bring a blanket indictment and then expect the defendant to crawl out from under the blanket as best they can. On the other hand, the funds of the state are limited. The staff of a labor board is kept busy with hearing complaints and making inspections. There is rarely money enough to finance laboratory research.

What shall be done about a supposedly hazardous material? Forbid its use entirely? That might be equivalent to cutting off the tail just behind the ears. Such proposals, though not uncommon, are usually uneconomic, in that they tend to deprive industry of a useful product and eventually increase costs to the ultimate consumer. They are often accompanied by the suggestion that something else can be used. As no two commodities are exactly alike, there can be no perfect substitute. Incidentally, in most states, the enabling act authorizes the commissioner to regulate; he is exceeding his authority when he attempts to prohibit. With very rare exceptions, there is a safe way to handle any substance. It is the duty of the commissioner to find this safe way and not to retard progress by prohibiting its use either directly, or by too rigid regulation.

General Conclusions

In the midst of this confusion one might list a few general principles that should guide committee deliberations:

1. The traditional conflict between labor and capital has no place in the consideration of safety measures;
2. Each proposal must be genuine, and not represent a devious attempt to accomplish an ulterior purpose;
3. The condition to be corrected must be of wide occurrence: individual plant difficulties can be corrected without burdening a whole industry;
4. While life and health are paramount, speed and economy of production must be considered;
5. For every proposal there must be a fact basis, usually in the form of statistics. These facts must be current, and not taken from discarded processes. Assumptions and general impressions are insufficient evidence.
6. Caution must be observed in drawing an analogy between the reaction of animals in laboratory surroundings and of human beings in a workroom.
7. The commissioner or committee chairman should be conscious of his position as a public officer, responsible to employer and employee alike.

This is a day of codes of business ethics; would it be of service if some clever fellow should compile a code to be signed by every commissioner, committee member, and applicant for a hearing?

A preliminary report on the pulp and paper industry of Canada for the year 1927, issued by the Dominion Bureau of Statistics, gives the number of mills in operation as 114, of which 42 were pulp and paper mills, 42 pulp mills only, and 30 paper mills. The amount of capital invested was $579,863,552, the total number of employees 32,876, and the salaries and wages paid, $45,674,293. Pulp was manufactured to the value of $114,442,541, and paper to the value of $168,445,548, making a total gross production of $219,329,753, as compared with $215,370,274 for 1926. The total net production for 1927 was valued at $134,516,673.

Abstracts from the
Swampscott Nitrogen Symposium

We present below extractions from a majority of the speeches which contributed to the success of the first Economic Symposium on Nitrogen at the Fall Meeting of the American Chemical Society at Swampscott, Mass., September 12th.

The International Nitrogen Problem

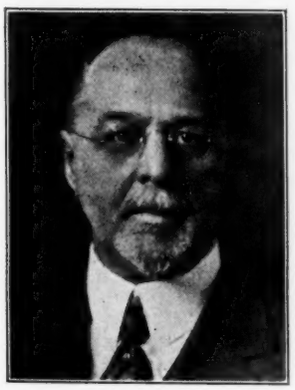
By W. S. Landis

BEGINNING in a small way twenty-five years ago the various atmospheric fixation processes have shown steady growth, and now dominate the industry. The nitrogen requirements of the Central Empires during the War gave these processes an opportunity to show their ability to meet the emergency, and they performed their allotted task so well, that contemporaneous history has more a military, than an economic, aspect. Were natural and by-product sources of nitrogen merely to hold present production rates, the present fixation plants, completed and under construction, would bring the world's production in 1930 to about 2,000,000 tons of nitrogen, rather more than less.

There has been no shortage of nitrogen since the War closed, as indicated by the fall in nitrogen prices and the curtailment of production in Chile. Yet to-day there are under construction plants which, if their program as contemplated is completed, will add an average of some 200,000 tons of new nitrogen annually for some years to come.

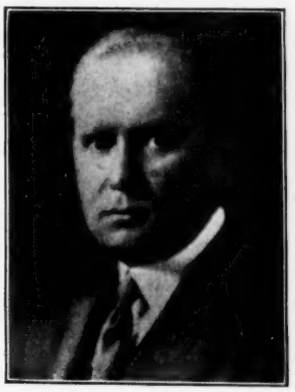
That the industry has favored the farmer is shown by the relatively severe drop in nitrogen prices as compared to the price of farm crops. While the farmer is receiving substantially higher prices for his crops than the 1913 level, the nitrogen producer is asking substantially less for his products. This relative price situation, together with more active selling pressure, has caused substantial increases in consumption of nitrogen. In the five years preceding 1914 the average annual increase of nitrogen consumption was about 50,000 metric tons. In the five years 1923-4 to 1927-8 the average increase in consumption of nitrogen was not so regular, but averaged about 75,000 metric tons per year, being less than the average for the early years and slightly more in the year just passed. These figures show that the annual increase in consumption is only a small fraction of the present rate of increase in production and of new production expected within the next few years.

The fixation industries, while in existence at the outbreak of the War in 1914, received their first great development during the conflict, largely through the necessities of the Central Empires, then cut off from the natural nitrates of Chile. At the close of the War there were in operation a dozen new fixation plants constructed during the war period, and in addition numerous completed plants and projects. There was probably a producing capacity of around 400,000 metric tons of nitrogen per year represented in the newly completed plants. Of this consumption there is in operation to day around 85% of that original capacity, and several of the more important plants have, in addition, been greatly enlarged since the close of the war and the new and old construction together is adding from 600,000 to 700,000 metric tons of nitrogen per year to the world's supply of this import-

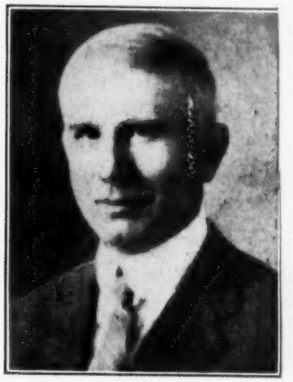


H. R. Bates

C. J. Ramsburg



E. M. Allen



W. S. Landis

ant commodity. Most of these plants were built with more or less Governmental financial assistance.

Aside from the military aspect is the question of food supply. A large part of the world lying east of the meridian of Greenwich is undoubtedly underfed. Limited resources are left for food after bearing the costs of the war, requiring that food prices be kept to a minimum to insure domestic peace. There has been too much weight placed on the relationship of nitrogen to food supply where military necessity was dictating the policy, in my opinion, for nitrogen is only one of a number of factors in growing crops.

Emphasis was also laid on the assistance the nitrogen industry would be in creating a balance of trade. With the air free to all and several successful processes, it was easy to create a domestic picture showing nitrogen could be produced without the necessity of importation.

The Politician in the Picture

With all these facts before the politician, there was ample background for his advocating the operation of the many war-time plants and the establishment of the many new programs now facing the industry. The relationship of supply and demand had no consideration in many of the new construction programs. The relationship of selling price to cost of production has nothing to do with operation of certain of the plants. Military preparedness is a formula that overcomes such little obstacles, and a trained operating crew in a proven plant is considered far more important than a profit or dividend.

The fixation industry itself is not ignorant of the present situation, and is doing what it can to find increased markets for the present and prospective surplus nitrogen. The present period of over-development will probably reach its peak in a comparatively short time, for while other countries are still giving consideration to new fixation projects, the scale of these newer undertakings is comparatively small and the effect of their completion will not be of major importance.

Progress of fixation development based upon military necessity naturally run counter to any attempt to monopolize nitrogen production in any one country. The many small and uneconomical plants built under such a motive in the various European countries, may not represent a broad sound economic policy, but we must face the fact that that is what is going on. Certain of the larger producers in Europe have publicly condemned the restrictions imposed by some of the smaller countries to protect the domestic nitrogen industry. Whether logical or illogical, these restrictions do exist and affect the international industry to a greater or less extent.

Constructive programs of increasing local consumption have been undertaken by certain of the more important producers. Prices have been lowered to the extreme to encourage the use of nitrogen. A most extensive propaganda has been undertaken. Various other means have been adopted or proposed to improve the purchasing power of the farmer.

The more important of the European nitrogen producers have endeavored to promote the use of nitrogen by the production of new fertilizer materials. It is hoped to increase consumption materially through the use of these compounded fertilizers which have as a basis the old established American fertilizer practice of furnishing the farmer a single material containing the three most important plant foods. For years Europe condemned this practice, only to finally recognize its merits and adopt the better of its practice.

Just a word on the relationship of America to the International situation. America is behind the world in increase in nitrogen consumption. On the other hand, American farm conditions differ from those in Europe. When Europe doubles nitrogen consumption it imports less food. If we double nitrogen consumption, we produce surpluses, with lower prices, unless we change our methods of farming and of marketing of farm products.

As a consequence, the American nitrogen industry offers possibilities only to producers of certain classes of nitrogen compounds adapted to our agricultural needs which must be sold relatively cheaply, for our level of farm prices is lower than in Europe, at least to the extent of the freight and handling charges.

In closing, there is no likelihood of the world starving to death because of lack of nitrogen; the starving is more likely to be on the part of the higher cost nitrogen producers who cannot sell their products at a profit in an over-supplied market. There will be a gradual diversion of fixed nitrogen from those products which are in over-supply, to others for which the industry has already found a place, or it is rapidly making a place, and with the inevitable increase of nitrogen, this will undoubtedly take care of our present capacity or production in this basic industry.

Synthetic Ammonia

By E. M. Allen

Very little has been written as to the cost of selling, distributing and transporting of anhydrous ammonia, but to those executives who are responsible for the millions of dollars invested in the synthetic ammonia plants, it is a very important and serious problem. This is a chemical age; things are moving so fast that little attention can be paid to experiences that are from three to five years old. In the field of synthetic ammonia it seems that this time limit can safely be placed at from six to twelve months and it is safe to say that no two installations are or have been identical.

Prior to 1925, anhydrous ammonia was shipped in cylinders containing 50 pounds, 100 pounds and 150 pounds, and this type of container is still used exclu-

sively for the shipment of anhydrous ammonia for refrigeration purposes, being considered the safest and most practical container to use for this trade. To-day there are between 185,000 and 200,000 cylinders in the hands of the manufacturers of anhydrous ammonia, all of which could be very easily handled by 100,000 cylinders. Here we have over $2,000,000 tied up in this class of equipment that is unnecessary; but the interest on this excessive investment has to be taken into consideration by the manufacturer, in arriving at his exact costs.

Since 1925, specially constructed tank cars have been developed for this growing industry, first, those that would hold 30,000 pounds of anhydrous ammonia, and more recently one that holds 50,000 pounds. While to-day there are approximately 40 of these cars in use, it is safe to say that before the end of 1929, 150 or more of these special tank cars will be in the service for the transportation of anhydrous ammonia.

There have also been developed single unit containers that will hold 1,000 pounds of ammonia, similar to the 2,000 pound container, now being used for the transportation of liquid chlorine on the well-known multiple unit tank car.

The advent in this country of the manufacturing of anhydrous ammonia by the synthetic process forecast the elimination of the old method of distilling ammonical liquor.

Anhydrous Ammonia Price Reduced

This replacement of the old method of the manufacture of ammonia by the synthetic process was followed by a drop in the price of anhydrous ammonia to about one third of the old prices that prevailed, but the old method of selling and distributing ammonia for the refrigerating trade, still maintains with its high priced costs, and here we have a situation whereby it costs the manufacturer two and a half or three times as much to sell and distribute the product, as it costs to produce, and a change in the selling and distributing practices must be developed.

There are at present approximately 25 plants in the United States oxidizing ammonia, in the manufacture of sulfuric acid, and it is estimated that approximately 3,000,000 pounds per year are now being used in this field.

The soda ash industry consumes 7,000,000 to 10,000,000 of ammonia per year and virtually all of the ammonia now used in the ammonia soda process, comes from by-product coke oven plants. But the price of this ammonia liquor has now reached the point where any further reduction in price would cause the by-product coke oven operators, to turn their ammoniacal liquor into sulfate.

Ammonia oxidation is also being extended in the nitric acid industry, and a very large expansion of this process can be looked for in the future. The explosive industry offers a great field, for when one realizes that there are used in the United States over 5,000,000 pounds of explosives per year for peacetime purposes, such as mining, quarrying, etc., and this will consume approximately 70,000,000 pounds of ammonia, one can see the possibilities of the increased ammonia consumption in this field.

Undoubtedly the largest future use of ammonia lies in the fertilizer industry. But the greatest need in the fertilizer field lies in educating its users to buy highly concentrated fertilizers, and do the mixing at or near the point of consumption.

In the manufacture of synthetic ammonia the largest single cost item is the cost of hydrogen, and herein lies the greatest opportunity for the activities of the chemical engineer; in the development of new processes towards cheaper hydrogen, coupled with less expensive methods for the purification of hydrogen that comes from water gas or from by-product coke oven gas.

Economic Relations Between Nitrogen and Fertilizer

By H. R. Bates

IT WAS about thirty years ago that the famous British scientist, Sir William Crookes, startled the world with the statement that unless we took advantage of the inexhaustible supply of nitrogen in the air, to supplement the Chilean nitrate, we would eventually face starvation.

Strange to say, it was not nitrogen for food, but nitrogen for war, which supplied the incentive for the increased production. Stranger still, the production continues to increase after the incentive has been removed.

The influence of the World War on nitrogen production was far reaching. In 1913 we find the production as follows: Chilean nitrate 429,897 tons fixed nitrogen; by-product ammonia 319,667 tons fixed nitrogen; synthetic ammonia 90,491 tons fixed nitrogen; total 840,055 tons fixed nitrogen.

At the close of the War, we find the order of production reversed, and synthetic ammonia has taken the lead, with the 1927 tonnage as follows: synthetic ammonia 700,000 tons fixed nitrogen; Norwegian saltpeter 30,000 tons fixed nitrogen; cyanamid 200,000 tons fixed nitrogen; total 930,000 tons nitrogen; by-products sulfate of ammonia 370,000 tons nitrogen; Chilean nitrate 320,000 tons nitrogen; grand total 1,620,000 tons nitrogen.

With the nitrate consumption apparently decreasing, by-product sulfate remaining about the same, and synthetic products increasing rapidly, some idea of the increase may be apparent when we find but 1.00% nitrogen from the air in 1909 and 57.00% in 1927.

In 1909 the United States produced but 106,500 tons of by-product sulfate of ammonia, equivalent to 21,939 tons of nitrogen. In 1921 our atmospheric nitrogen was but 200 tons. In 1925 it was 13,000 tons with 30,000 tons capacity in 1927.

To-day we have a production of 715,000 tons of by-product ammonia, equivalent to 147,290 tons of nitrogen. About 87,550 used in agriculture, 28,840 tons exported, and the balance used in other industrial operations.

It has been estimated that the loss of nitrogen in the United States lands under cultivation, not replaced by manure, leguminous crops, atmospheric precipitation of rain and snow, and by commercial fertilizer, is between 3,000,000 and 4,000,000 tons. To replace this would require 15,000,000 to 20,000,000 tons of sulfate of ammonia, or more than 100,000,000 tons of fertilizer carrying 3.00% nitrogen per ton. Surely no other industry has such a possibility for future expansion, and no other country such a need for conservation and expansion of its nitrogen resources.

In all we might supply from natural organic sources, production and importation, between 45,000 and 50,000 tons of organic nitrogen, and no prospect of increasing this amount.

Nitrate of soda first made its appearance in the United States in about 1830, and has maintained up to 1925 its supremacy as the most important source of mineral nitrogen. In 1925 with the world's sulfate of ammonia by-product an synthetic ammonia increasing 50,000 tons in 1926, 100,000 in 1927, and 300,000 tons in 1928 over 1925, nitrate of soda lost its dominance as a controlling factor in fixing the price of the world's nitrogen.

Chile may continue to produce, the Government may give the producers a $4,000,000.00 subsidy in lieu of a tax reduction, a central selling agency may be established, but in the end nitrate must now follow its synthetic master.

Sulfate of ammonia, or by-product ammonia in the form of sulfate of ammonia, 370,000 tons of the world's nitrogen supply, finds 147,290 tons produced in the United States, equivalent to 715,000 tons of sulfate of ammonia.

Unless there is an unforeseen demand for pig iron, we have reached our limit in the United States of such nitrogen production, and we must look to other sources to supply the deficiency, or acknowledge our dependency upon other nations.

Up to the present time the synthetic production of nitrogen in the United States has gone into refrigeration, explosives and the chemical trade.

The chief synthetic ammonia products of interest to the fertilizer industry are: sulfate of ammonia, leuna saltpeter, calcium nitrate, calurea, cyanamid—Ca Cn2, ammo phos—NH4H2PO4, nitrate of potash, urea—CoNH2, domestic synthetic sodium nitrate.

The latest statistics show we imported in nine months of 1927-28 the following tonnages of synthetic products, in addition to the Chilean nitrate: sulfate of ammonia—38,931 tons; leuna saltpeter—67,733; calcium nitrate—23,254; cyanamid—126,152; and urea—538 tons. In 1926-27, they were: sulfate of ammonia—3,470 tons; leuna saltpeter—12,282; calcium nitrate—18,253; cyanamid—109,330 tons.

The fixation industry in the United States has certain factors which almost guarantee its permanence and expansion. The demand is here and our production short, with our population increasing one and a half millions annually. The raw materials are plentiful and cheap, power is not such an important factor as formerly, and their conversion to commercial plant foods has been successfully demonstrated by the chemists and engineers. With increasing production will naturally follow process economies, and we may soon take a place much higher in the nations' list of nitrogen producers, instead of 7th with but 1100 tons of fixed nitrogen per million population.

Such progress has been made in the nitrogen art that the Cyanamid process no longer the leading method. Cyanamid requires 12,000 to 15,000 K.W.H. to fix a ton of nitrogen, while the Haber-Bosch, German, process requires but 4,000 to 5,000. Therefore, to compete with nitrogen's present unit cost from the synthetic process, power must be available at $4.00 to $6.00 per horse power year, the maximum figure being equivalent to $.001 per K. W. H. Power can be sold anywhere in the United States for $20.00 to $25.00 per H. P. year, or $.003 to $.0035 per K.W.H.

The direct synthetic process offers greater promise of cheaper nitrogen than any other process and new synthetic compounds will no doubt continue to appear from Germany and soon from England. Their action in combination with other materials must be acceptable to the manufacturers and soil chemists. They must remain under storage and in packages in good dry drilling condition. Their nitrogen must be in a combination that will not damage crops, especially at the germination period.

When these combinations are made and the unit costs are proportionate to the unit costs of other materials, then the production of those compounds will become of great importance to the producers and consumers.

With this increasing supply of acceptable products, already a surplus in one or two countries, is bound to come radical changes in the agricultural of the United States and the rest of the world. As the cost is lowered, the marketing area will expand and eventually the standard of living of the entire world will be raised. Instead of nitrogen starvation, we will have an area of nitrogen prosperity.

Economic Status of By-Product Industry With Reference to Nitrogen Situation

By C. J. Ramsburg

THE past development, present position and future prospects of by-product nitrogen can best be understood with a discussion of the by-product coking industry as a background.

The first by-product coke ovens in the United States were constructed at Syracuse, New York, in 1893, a battery of 12 ovens. Twenty-five years ago there were 1956 by-product ovens in operation. They produced 1,882,394 tons of coke, or 7.4% of the total coke produced in that year. The average production per oven was 962.4 tons, or at the rate of 2.64 tons per day. Modern by-product ovens have been constructed to produce nearly 25 tons of coke per day, the increase being due both to larger size of ovens and to the decreased coking time, made possible by advances in design and operation. At the plant of the Carnegie Steel Co., Clairton, Pa., the largest coke plant in the world, there are 1482 by-product ovens, producing nearly 8,000,000 tons of coke per year, or over four times the entire production of by-product coke in 1903.

During the past 15 years, by-product ovens have been responsible for more and more of the total production. By-product coke production in 1913 amounted to 12,714,700 tons or 27.5% of the total. In 1927 the production amounted to 43,884,726 tons or 86.2% of the total. During the first six months of 1928, by-product coke has increased to 91.2%. In 1927, 63,224,400 net tons of coal were charged to by-product ovens, of over 12% of the bituminous coal produced.

In a beehive oven, a ton of coal yields 1,300 lbs. of coke and no other products. The same ton of coal in a by-product oven yields:—(a) 1,500 lb. of coke and breeze (b) 11.1 M. cu. ft. of gas; sufficient to supply the average domestic consumer for over four months (c) 8.6 gallons of tar; containing sufficient creosote for 1.6 railroad ties and pitch for 36 sq. ft. of roof (d) over 2.5 gallons of motor fuel; sufficient to give anti-knock properties to 10 gal. of gasoline (e). Other light oil products (f) 22.7 lb. ammonium sulfate; sufficient to treat 0.15 acre of potatoes or 0.2 acre of cotton land.

Usefulness of By-Product Industry

The service rendered by the by-product coking industry in normal times is more than sufficient to warrant its continued activity. But in addition, this industry has another function that is frequently overlooked, namely, it is a potential source of a large amount of materials for munitions. During the World War, practically all by-product coke plants installed equipment to recover and partially refine light oils, with the result that in 1918, 8,862,000 gallons of toluol and 44,805,000 gallons of benzol were recovered, in addition to 87,222,450 gallons of crude light oil. In the same year, the equivalent of 174,327,000 pounds of anhydrous ammonia, or 697,308,000 pounds of ammonium sulfate were produced in the by-product coking industry.

The nitrogen needs of the country for explosives in war times are estimated at 144,000 net tons. In 1927, by-product coke ovens produced the equivalent of 147,800 tons of fixed nitrogen, or more than the estimated war-time requirements. If all the by-product coke ovens in the country were operated at maximum capacity—as they undoubtedly would be at the time of a national emergency—they would produce the equivalent of 190,540 tons of nitrogen.

The total nitrogen in coal ranges from 1.45 to 1.75%, only a part of which is converted into ammonia by the coking operation.

By-product ammonia is generally prepared in the form of sulfate. If so desired, it could be prepared in any other form of ammonium compound. However, the sulfate is most convenient for the coke and gas plant, and since there is a potential market for much more sulfate than is sold at present, it is probable that the sulfate will continue to be the predominating form of by-product ammonia.

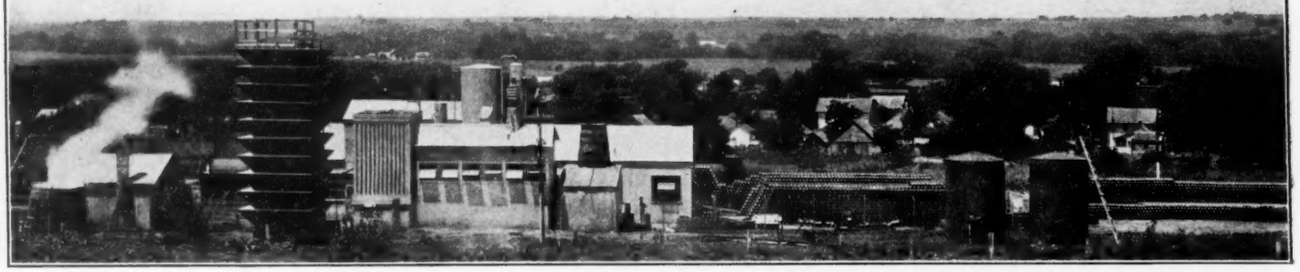
Since under normal conditions, the yield of ammonia per ton of coal carbonized does not vary greatly, and since all the ammonia formed must be recovered, the quantity of by-product ammonia produced is almost directly proportional to the by-product coke produced.

The production of by-product ammonia for 1928 is estimated at four times the production in 1913. During this same period, the percentage of by-product coke has increased from 27.5% to 92% of the total coke production. The natural growth of the steel industry, together with the wide-spread demonstration of the economy and efficiency of coke oven gas as the source of base load supply for city distribution and the growing recognition of the value of coke as a smokeless fuel, will cause more by-product coke ovens to be built in the future. The rate of increase in by-product coking capacity, however, will likely be slower than it has been in the past two decades. Consequently, the rate of increase in by-product ammonia production will also be slower.

The percentage of fixed nitrogen supplied by by-product ammonia will gradually decrease, despite slight increases in tonnage produced. To borrow an analogy from the gas industry, by-product ammonia will supply the base load, since it is produced in fairly uniform quantities, while other processes must supply the peaks. Sound economic principles demand that by-product ammonia be sold first, at a price governed by demand and by manufacturing costs for other processes for fixed nitrogen.

By-product ammonia is responsible for 47.5% of the total distribution of nitrogen in the United States for the fertilizer year 1926-27. By-product ammonia is produced by an industry that has a fixed investment of over $700,000,000, which treats 12% of the bituminous coal mined in the United States and which sells annually over $400,000,000 worth of coal products. The production of by-product ammonia has increased four-fold since 1913, but its growth in the future will be slower. The demand for nitrogen will increase at such a rate that by-product ammonia will not be able to maintain the percentage which it has held in recent years. Other sources must supply the increased demand.

HELIUM DEVELOPMENTS



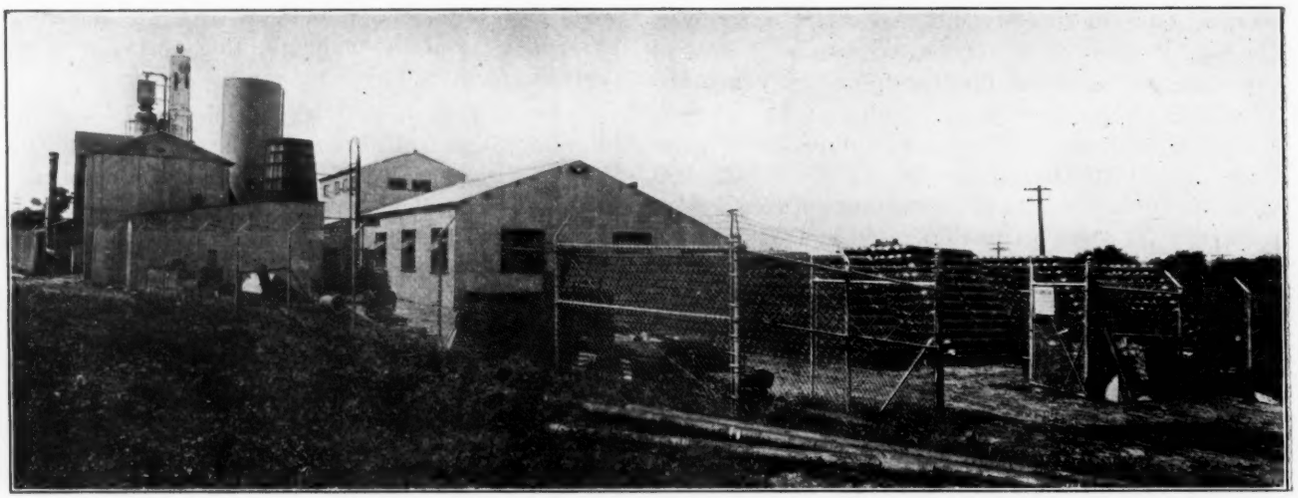
By R. R. Bottoms

Chief Chemist, The Helium Company

THE opening in September, 1927, of the first independent commercial plant for the extraction of helium from natural gas marked another step forward in the development of the natural resources of this country. This plant, built at Dexter, Kansas, only a stone's throw from the well in which Dr. H. P. Cady first discovered the occurrence of helium in natural gas in 1903, is a pioneering project. Ground was broken for this plant in May, 1927, and four months later the plant was placed in operation, and has been producing helium of 96 per cent. to 97 per cent. purity since that date.

History of Helium Production

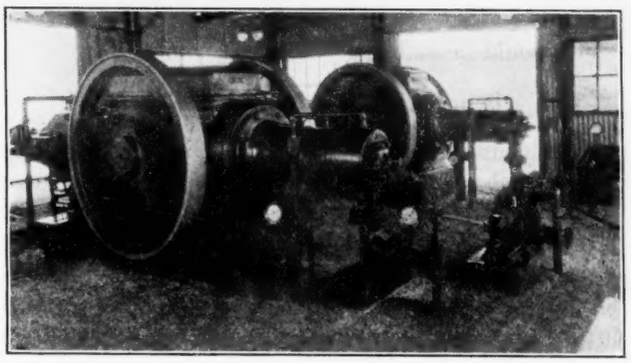
Farly in 1903, an oil company was conducting explorations for oil in the edge of the little town of Dexter in the southern part of Kansas, and struck a flow of gas at a depth of about 350 ft. The gas came out with a roar, blowing out mud and rocks over the top of the derrick, and the noise was heard throughout the town of Dexter. Since there was no natural gas production in this section of the country at that time, the little town was elated, there would be no more hot coal stoves for cooking, no more ashes to be taken out of the furnace since here, within the town, was a source of fuel which was ideal. A celebration was planned, and was widely advertised. People gathered from miles around to witness the ceremony of turning the gas into the mains. The mayor had prepared a beautiful speech, which he delivered with all the dignity at his command. At the end of the speech-making the gas was turned on and the mayor applied a match. The gas blew the match out. An oil-soaked rag was then prepared, was set afire and applied to the gas stream. The gas then blew this out. It was explained to the audience that this was due to the high gas pressure, that they would pipe the gas a little way from the speaker's stand and build a bonfire and turn the gas in under it, which would then set the gas afire. This was done, but the gas put out the bonfire. It is reported that the crowd went away



Exterior view of helium plant showing containers awaiting shipment.

laughing. The joke was on Dexter. Their wonderful fuel would not burn.

The puzzled mayor sent for Dr. H. P. Cady of the University of Kansas to come down and make an investigation of the gas to find why it would not burn. Samples were taken and tested, which resulted in the discovery of helium for the first time in natural gas deposits of the United States. Subsequently Dr. Cady undertook the analysis of gas from a number of different localities in Kansas and found that practically all gas in Kansas carried quantities of helium, varying from one per cent. to more than two per cent. The results of Dr. Cady's tests were published in the



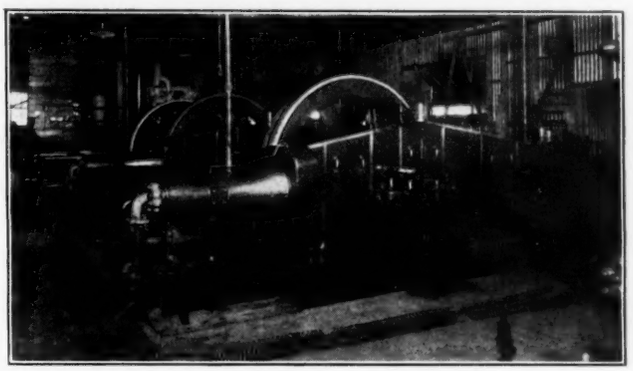
Gas Pooster Station. This booster takes gas at well pressure and forces it into transmission line at 300 lbs. pressure.

American Chemical Society's Journal, Volume 29, page 1,524, of 1907.

At the time these reports were published, they were merely taken as a matter of curiosity and were then practically forgotten until the beginning of the World War in 1914. Shortly after the war started in 1914, during the Zeppelin raids on London, the British, in attempting to shoot down one of the raiders failed in every attempt to ignite the lifting gas, and it was assumed that the Germans had discovered some kind of non-inflammable balloon gas. It so happens that they had not, but this incident started the British out on the search for helium-bearing gas. This work was under the direct charge of Sir Richard Threllfall, who sent a man to Eureka, Kansas early in 1915 to investigate sources of helium-bearing gas. A report was made regarding the findings, but the British thought at that time that the war would not last very long, and for that reason nothing was done to develop the sources of helium for the British government in the United States. The Canadians, however, carried on the work and had produced a small amount of helium prior to 1917. Later, when the United States entered the war, all the data regarding helium then in the hands of the British was transmitted to the War and Navy Departments, and the Bureau of Mines was requested to undertake the work of finding a suitable source of helium for the United States. At the same time two concerns engaged in commercial oxygen production were invited to submit plans for the erection of plants for the extraction of helium. Three experimental plants were then constructed, two at Fort Worth Texas, one by the Linde Air Products Co. and one by the Air Reduction Company, and one at Petrolia, Texas, designed and built by the Bureau of Mines, using the Jefferies-Norton processs. The latter was designed and built as a full scale production unit, but proved to be a complete failure. The plant designed by the Linde Air Products Co. proved to be the most satisfactory, and their type of plant was adopted for the full scale production plant. The construction of the large scale production plant was begun early in 1918, under the direction of the Bureau of Steam Engineering of the Navy Department, acting under the direction of the War and Navy Departments jointly, and was put in operation shortly before the armistice was signed. This plant has been in production, with the exception of a short period of shut-down, since that date, and has produced a total of about fifty million cubic feet during that period. The cost of this plant, including all experimental work, was approximately $10,000,000.00.

The Plant

The Helium Company's Dexter plant is equipped with three 85-h.p. Cooper gas engine driven gas compressors. These compressors take the gas at the pipe line pressure of 300 lb. and boost it through one stage to about 2,000 lb. pressure, at which pressure it is de-hydrated by means of silica gel, and then passes into the helium separating column. There are two of these columns, having a combined daily capacity of 25,000 cu. ft. of pure helium. Before entering the plant, the gas, which contains approx-



Interior view of plant showing gas compressors with separating column in background.

imately two per cent. helium, undergoes a process of purification in which CO_2 and gasoline are removed, the CO_2 being removed by scrubbing with caustic soda solution in a standard Winkler-Koch absorber tower, the gasoline being removed by means of a South-Western Engineering Co.'s standard gasoline absorption plant.

Occurrence of Helium

Helium occurs in small quantities in nearly all the natural gas produced in the United States. In the eastern fields, in the Gulf Coast field, and in the Pacific Coast fields, the helium is usually less than

one per cent. but in the gases of the mid-continent field and the Rocky Mountain field, the helium content varies from one per cent. to as high as 7 per cent. The largest quantity of gas carrying high percentages of helium is found in the mid-continent field, which extends from north-central Texas through Oklahoma and into Kansas, and also in the Texas Panhandle field, where gas is found ranging in helium content from two per cent. in the eastern end of the field to 1.7 per cent. in what is known as the Potter County field or Cliffside structure.

A large number of analyses of natural gas have shown that wherever a high percentage of helium occurs the gas is usually of low heat value and contains a high percentage of nitrogen. A few typical analyses of gas are given below.

Name of Well	*Location*	*CO_2*	*Methane*	*Helium*	*Nitrogen*
Dobson No. 2	Dexter field	.05	14.8	2.23	84.92
Countryman No. 1	Dexter field	.37	1.63	2.8	95.2
Countryman No. 2	Dexter field	.12	1.7	2.87	95.31
Esch No. 1	Dexter field	.18	3.6	2.3	93.92
Magdalene No. 1	Fairport field, Russell City, Kansas	.29	48.4	.8	50.51
Chinnberg No. 2	McPherson field	.00	41.0	2.45	66.55
Crawford No. 1	Elmdale field, Chase City, Kansas	—	—	.95	—
Ames No. 1	Moline field, Elk City, Kansas.	.25	26.	3.4	Balance
Foraker No. 1	Foraker Okla. field	—	—	.56	—
	Princeton, Ky.	.4	99.0	.1	Balance

The question as to the reason for the occurrence of helium in natural gas has not been satisfactorily solved. It has been thought by some that the helium occurring in natural gas is the residue of air that had been entrapped in the formations before they were covered by subsequent geological deposits, but it is the belief of many that the helium which now occurs in natural gas is due to the disintegration of radium or radio-active minerals in surrounding source beds. It is not believed, however, that this source of helium would be sufficient to produce the enormous amounts of helium contained in such deposits as the mid-continent fields and the Cliffside structure near Amarillo, Texas.

It has been previously believed that the shallower the helium-bearing strata, the richer in helium the natural gas will be, but this belief has been definitely proven erroneous through recent discoveries of helium-bearing gas. As an example, in the Dexter field, the gas occurring at 300 ft. carries about 1.7 per cent. helium, at 650 ft. 1.8 per cent. and at 950 ft. per cent., at 1,100 ft. 2.8 per cent., while the gas occurring in the Moline field is found at 2,100 ft. and has a helium content of 3.4 per cent. although gas occurring at Dexter at 2,300 ft. carries a helium content of only 75 per cent.

The conclusion from these facts is that the percentage of helium in helium-bearing gas has no relation to the depth from which the gas comes.

It seems probable that within the next few years the volume of helium required to supply the demands developed by expanding airship transportation will have increased to 50,000,000 cu. ft. or even 100,000,000 cu. ft. per year. Ten years ago it would have been considered impossible to supply for more than three or four years such an enormous volume of this gas. But explorations during the last ten years have disclosed such vast deposits of helium-bearing gas that it seems same to assume that our reserves of helium are as inexhaustible as our natural gas resources. Recent estimates of the reserves of helium occurring in natural gas carrying from .5 per cent. by volume of helium and up are given below:

Kansas	500,000,000 cu. ft.
Oklahoma	500,000,000
Texas	2,000,000,000
Other states	4,000,000,000
Total	7,000,000,000 cu. ft.

If helium were produced and used at the rate of 100,000,000 cu. ft. per year, the reserves already in sight would be sufficient for over seventy years.

Properties and Uses of Helium

The combination of properties that gives helium its unusual value are: Its chemical inertness, it enters into no combination with other elments; its low specific gravity, .138 as compared with air as 1.0. It weighs but 11 lb. per 1,000 cu. ft. while air weighs 80 lb. for the same volume, hence helium gives a lifting power or ascencional force of 69 lb. per 1,000 cu. ft. The above two properties make helium of particularly desirability as a balloon gas for filling observation balloons and airships of the blimp and Zeppelin types.

Helium, being chemically inert, it follows that it is non-poisonous, its solubility in fluids is less than half that of nitrogen and its rate of effusion is more than three times the rate of nitrogen.

This latter combination of properties makes helium useful in deep sea diving and cassion work to prevent the cassion disease or bends. The bends results from the liberation of small bubbles of nitrogen which had been dissolved in the blood at high pressure, and which later is released in the circulatory system and lodge in the capilaries at the base of the brain, cutting off circulation of blood and producing unconsciousness. Helium mixed with oxygen as a breathing medium prevents this, due to the fact that it is less soluble in the blood and upon release of pressure escapes into the lungs at a more rapid rate than nitrogen. It makes possible working at greater depths and permits a greater de-compression rate than is possible with air.

Helium is used in filling radio tubes and in glow type electric signs to give certain color effects. Helium is an ideal inert gas for industrial operations to prevent fire and explosion. Its peculiar combination of properties will also make it valuable in metallurgical work in preventing scale and eliminating dissolved gases from molten metal.

The development of new uses for helium has heretofore been prevented, due to the fact that helium gas has not been available in sufficient quantities for carrying on extensive tests, but now that helium has been made available in almost unlimited quantities. it is assured that new uses will be found for the gas.

The Bankers' View *of our* Foreign Financing

By John Foster Dulles
Counsel to American Commission to Negotiate Peace

DURING the nine years which have passed since the War, our bankers have sold in this country approximately $11,000,000,000 of foreign securities. Now I suppose it is the prevailing impression that by these operations our bankers have poured money into Europe, good American dollars which will probably never come back and which we could very well have used here ourselves, and that all this has been done by the bankers primarily in order that they may make large commissions on these transactions. Certainly that is the point of view which is generally expressed by writers who have attained wide popularity through having caught the knack of telling the public what it knows, or what it thinks it knows, or what it wants to believe.

There are two sides to every argument. Mr. Dulles, because of his connections with our post war financial manoeuvers, is very capable of presenting that side of the picture, the soundness of which has been questioned by industrial leaders in previous issues.

We see on all sides the charge that by these loan operations our bankers under the lure of fat commissions, have been pouring money into Europe which we could very well have used here, particularly for our agricultural projects and in aid of our farming classes.

Many of you have probably seen as I did a very vivid cartoon in a recent publication of wide distribution. It showed the interior of a restaurant. The American banker was portrayed as a waiter. His itching palm had been well satisfied. He was serving a luscious and heavily frosted cake to a guest who was denominated "Europe." The cake was labeled "$13,000,000,000." The picture showed emaciated and tattered figures outside the restaurant pressing their wan and pathetic faces against the window. These figures were our agricultural and irrigation projects.

Those of us who are so unfortunate as to have an inquiring type of mind could not, I think, have gone away from that type of literature and from that kind of picture entirely satisfied. There must have arisen in our minds some question as to the complete accuracy of the picture that was thus portrayed. If our foreign loans are primarily ascribable to bankers' commissions, why did we not make loans before the War? So far as I am aware, neither money, nor bankers, nor even commsisions are a post-war invention. And as to this money, this $13,000,000,000 that has been poured into the tills of European concerns, how did it go from us? Not in the form of gold, because we have more gold now than when we started to loan. Has it gone in the form of currency? Hardly, the amount is twice the entire currency of the United States. And if it went abroad, where is it? A good many of us go abroad and we do not see any signs of 13,000,000,000 American dollars lying around Europe. It is a lot of money. It is many times the combined currency circulation of England, France and Germany. It could not be readily concealed. And, indeed, one may wonder what object European and other foreign nations would have in paying high-interest rates to borrow dollars to be shipped abroad by the ton.

So I think we are very well justified in feeling that this popular picture is not in all respects correct, and that we can very usefully make a somewhat more searching inquiry into the question of why we loan money as we do, why we loan the amounts that we do, and what becomes of the proceeds.

If we are interested in that question, the place to look for the answer is in the statistics of our trade movements. The reports of the Department of Com-

merce show that during the nine-year period since the War—the period which I am discussing—we have exported in the aggregate $47,000,000,000 worth of goods. What does this mean? That means that in some way the foreigners who took our goods had to lay their hands on 47,000,000,000 dollars in order to pay our exporters for the goods which they sent abroad.

International Exchange

Where and how did the foreigners who bought our $47,000,000,000 of goods get the dollars to pay that amount? They got them primarily in the form of imports to us, and during this same nine-year period our imports from abroad amounted to approximately $36,000,000,000. Foreigners also got some additional dollars through rendering services to our tourists who went abroad, and in this way, and during the same period, foreigners acquired about $3,000,000,000 more. But you will observe that there is still a considerable difference to be made up between the $47,000,000,000 they had to get, and the $36,000,000,000 from imports to us and the $3,000,000,000 from tourist services. That difference of dollars they had to borrow, and when foreigners borrow dollars that in turn sets up a new dollar requirement in the form of interest upon the borrowed money. During the nine-year period we are considering, foreigners had to find about $3,000,000,000 more to pay interest on the money they borrowed. So you will see that this factor of the interest on the borrowed money during this nine-year period approximately absorbed the $3,000,000,000 which Europe received from services to tourists.

There are a number of other minor factors which might be taken into account but which substantially balance. However, the net result of the situation is that Europe has had to borrow the difference between the $47,000,000,000 of exports and the $36,000,000,000 of imports. That difference you will observe is $11,000,000,000, and $11,000,000,000 is precisely the amount of foreign securities which our bankers have sold during the nine-year period.

Striking a Balance

It is not due to some extraordinary coincidence that this nice balance is attained. It is inevitable that this should be so, because foreign borrowing is the balancing figure in the international balance sheet. Nations borrow from one another as they require foreign money to pay for goods or to pay debts. If the international balance sheet can be balanced without borrowing there will be no borrowing. That is interestingly illustrated by the present French situation. A little while ago our State Department lifted the ban on French financing and it was assumed that there would immediately follow a great flood of French securities and of French borrowing in this market. Actually there has been virtually no borrowing. Not because there are no people in France who want to have the use of more money, but because the general balance between France and the rest of the world is such that France is already getting—either from her own exports, or from services to tourists, or from German reparation payments—all the foreign exchange which France requires to pay for the goods which she gets from abroad and to pay the debts on which she owes interest abroad.

It is essential in considering this matter of foreign loaning to remember that dollars, as such, are of no interest to any foreign borrower. Dollars are spent here. It is here that they have value in the form of purchasing power and can be used to liberate one from a debt. A foreigner would never borrow merely for the purpose of importing dollar bills into his own country. They borrow dollars as they require dollar purchasing power or to pay debts in this country. We may rest assured, when we see the reports of these vast loan figures, that the proceeds of these loans are invariably utilized in this country to pay debts here, to buy goods here, and indeed a great part of the proceeds of these loans goes into the hands of the farmer for the wheat and the cotton which he exports.

Foreign Loans Inevitable

If anyone says to me that we are loaning too much money to foreigners, I may be prepared to agree with him in principle, but what I will ask him to do is to get out a pencil and paper and put down in black and white the international balance sheet as he would have it. Let him put on one side of the page the amount of dollars which he would have foreigners spend here to pay their debts and to buy American goods. Then let him put on the other side of the page the way in which he would have foreigners get those dollars. These ways, basically, as we have noted, are sales of their goods to us, tourist services, and borrowing. If you eliminate borrowing, it is humanly impossible to make the two sides balance either you reduce our exports or increase our imports, or ease the dollar requirement by eliminating the service on debt, as for instance the Allied war debts.

But it is an extraordinary thing that, as a practical matter, the most violent critics of our foreign lending are the same people who want us to have gigantic exports, who want to maintain a high protective tariff to keep our imports, and who insist upon the collection of war debts to the last penny. It cannot be done. You have got to have a balance between those factors, and so long as we have a national policy of promoting exports, or protecting our industry by a high tariff, of full collection of debts—so long as we have such a policy and the basic economic conditions remain substantially as they are to-day—so long must we finance our exports very largely through the medium of loaning foreigners the money wherewith to pay for them.

That is the service which has been performed during the past nine years by the $11,000,000,000 of foreign securities which have been sold here. Without those transactions we would have had the spectacle of

surplus goods piling up on our shelves and in our warehouses and not getting to the place where those goods were desperately needed. It is the highest function of finance to move goods from the place where they constitute a surplus to the place where they will fill a deficit, and in performing this service during the past nine years our bankers have given an extraordinary demonstrations of the beneficient use of financial power.

I have spoken of one phase of the banker's duty—that of moving goods from where they are a surplus to where they will fill a deficit—but there is another and equally important duty which devolves upon the banker; it is the duty of seeing to it that the securities which are the medium of this financing are securities which are sound from an investment standpoint.

The discharge of that duty under normal conditions requires merely an investigation into the financial status of the individual borrower. But during the past few years it has imposed upon the bankers the duty of looking into and profoundly influencing the economic and political situation of whole nations themselves.

Europe's Speedy Recovery

The recovery of Europe has been so rapid that it is even now hard for us to recall the desperate economic and financial condition which prevailed after the Armistice. There was a spectacle of nations overwhelmed by vast burdens of debt, with depreciating currency, with unbalanced budgets and with a general loss of hope and initiative. Under such circumstances the securities of these countries were obviously not of a character which our bankers could properly handle and pass on to their clientele, and our bankers declined to handle the securities under those conditions. But their declination was not final, was not unconditional, was not a slamming of the door in the face of needy people. It was constructive. It was a declination which was accompanied by a statement of conditions which American bankers believed were capable of realization, and which, if realized, would restore conditions to such a degree that our bankers could properly handle the securities of those countries.

Those conditions were often times difficult of realization. They were oftentimes inconsistent with the realization of certain political ambitions, inconsistent even with the realization of certain treaty terms, and in such cases there ensued a test of strength between the power of international finance and the political power of the countries in question. An interesting illustration is the situation in the case of Germany. Germany emerged from the War with a reparation liability fixed at $33,000,000,000 pursuant to a treaty which was construed as giving to the reparation creditors the right to the collection by actually going into Germany and seizing German property virtually at will. Under these conditions Germany was obviously not a country whose securities could properly be handled by the American banker.

Politicians Are Beaten

On the other hand, the reparation creditors quickly perceived that it would be an exceedingly useful and convenient thing for them if Germany was able to borrow dollars. For, if Germany was to pay reparations, Germany must get food and raw materials, and would also be additionally convenient if Germany could borrow dollars which, as such, could be turned over to the reparation creditors, giving them purchasing power in this country. And as early as the fall of 1921 the Reparation Commission appointed a committee to investigate the feasibility of German borrowing abroad. The Bankers' Committee reported that this would be impractical in view of the existing treaty liabilities of Germany. The Reparation Commission, in effect, then told the bankers to attend to their own business, which was assumed to be merely loaning money, and not to get mixed up in treaty matters which belong to politics and to statesmen. And the reparation creditors set out to show the bankers that they could handle reparations on their own, without help from the bankers. The bankers sat by and watched while the reparation creditors sent an army into Germany and picked up some coal and some rusty locomotive parts and then got stuck there with practically nothing whatever to pay the costs of their occupation. After that had gone on for a couple of years the politicians came back to the bankers and said, "after all, perhaps we need your help. Won't you tell us now on what conditions you will loan money to Germany ?"

The Bankers' Answer

The Dawes Plan was the bankers' answer. It was a drastic answer. It said that the occupation of the Ruhr must be ended and Germany's economy liberated. It said that the reparation liability must be radically cut as to amount. It said that even the reduced reparation payments would be made only in marks as a domestic obligation, and it so curtailed the right of the reparation creditors to use even these marks in Germany that the practical effect was to subordinate the reparation liability entirely to the ordinary commercial debt of Germany. The terms were drastic, but they were addressed to politicians who were humbler than they had been and who had more respect for the usefulness of bankers, and the terms were met. Under the Dawes Plan there has occurred a revival of Germany which in the character of its achievement is unprecedented, I think, in the whole history of the world.

Another type of case which I will briefly mention is Poland. Poland had tried to reestablish her currency in her own way and without outside help or assistance. In the face of a bad crop failure the situation broke down; Poland could not get the foreign exchange which she needed to finance her imports, and the newly established currency fell to approximately 40 per cent. of its orginially established value. The

Polish Government sent a delegation to this country to get the advice of our bankers as to how they could reestablish their economic, financial, and monetary situation so that they would have credit abroad. The American bankers acceded to their request, closely examined the whole financial situation of Poland and made recommendations which included the establishment of a new currency, changes in the Bank of Poland freeing it from political influence, and the appointment of an American as financial adviser, with broad power and influence over the finances of the treasury and the Bank of Poland. Those conditions were all accepted, and under them not only the external credit of Poland has been reestablished, but great internal benefits have accrued to the Polish nation and its 30,000,000 people.

Impoverished People Require Credit

I could go on with illustration after illustration—Austria, Hungary, Bulgaria, Belgium, Italy—I could write of such American ambassadors of finance as Roland Boyden on the Reparation Committee, Jeremiah Smith in Hungary, Gilbert in Germany, Howland in Greece, Dewey in Poland, Owen Young on the Reparation Commission. But when you cover the nations and when you cover the individuals, you come back to a story which in its broad outlines is always the same. A people impoverished, requiring foreign credit for necessary imports of raw materials, a request for the credit, the stipulation that the credit would be contingent upon terms, the acceptance of those terms, the reestablishment of a sound financial and budgetary position, the creation of the external credit, the purchase of our goods and their movement to where they fill a great need.

American Bureau of Metal Statistics estimates the world output of slab zinc in July at 128,500 short tons, compared with 128,100 in June and 131,700 in May, making world production for the first seven months of this year 908,900 tons.

This estimate is based on reports of countries that in 1927 furnished 97% of the world's output of zinc. These countries reported in July output of 124,302 tons, compared with 123,922 in June and 127,476 in May, making output of these countries for first seven months of the year 879,452 tons. Daily average in July for reporting countries was 4,010 tons, compared with 4,131 in June, 4,112 in May and 4,259 in March, high of the year. Daily average for the first seven months of 1928 was 4,129 tons, compared with 3,910 for the full year 1927.

Pulpwood exported from Canada during July amounted to 186,383 cords, valued at $1,991,884, compared with 201,112, valued at $2,201,711, in July, 1927. Woodpulp exports were valued at $3,896,754, while during July last year the value of these exports was $1,079,946. All pulpwood and 8 per cent. of wood pulp went to the United States. Japan is beginning to purchase considerable Canadian wood pulp.

Newsprint exports for the month amounted to $10,765,033, as against $9,146,271 for the corresponding month last year. The United States took newsprint to the value of $9,360,896; United Kingdom, $646,895; Australia, $179,077; South Africa, $114,019; Argentina, $290,465, and Cuba, $81,514.

Who's Who In Chemical Industry

Johnson, Cleon Rupert, technical director, Godfrey L. Cabot, Inc. Born, Worcester, Mass., 15 Dec. 1889; educat., Mass. Inst. Tech., S. B. in chem. eng. 1911. The Goodyear Tire & Rubber Co., Akron, O., chem. lab., mgr. efficiency & welfare dept., asst. fact. mgr. mgr. labor dept., chief chem. mgr. development dept., 1911-20; Cornell Tire Sales Co., Cleveland, Ohio, pres., 1920-21; Labor Comm. Cleveland Chamb. Comm., Cleveland, 1921-24; Humble Oil & Refining Co., Houston, Texas, mgr. devel. dept., 1924-25; Portland Servel Corp., Portland, Maine, pres., 1925-26. In Military service, Tech. Dir. Gas Defence Div., Chem. Warfare, 1917-18. Memb., Amer. Chem. Soc. Address: Godfrey L. Cabot, Inc., 940 Old South Bldg., Boston, Mass.

Lansing, Arthur Cornelius, chief chemist, Commercial Solvents Corp. Born, Cambridge, N. Y., 14 Aug. 1898; mar., Dorothy Helen Jones, Toronto, Ont., 6 Oct. 1923; children, 1 son, 1 dau.; educat., Cornell Univ., A. B. 1921; Colorado Schl. Mines, fellow chem. 1921-22. Lightfoot Schultz Co., chem. & soapmaker, 1922-23; John T. Stanley Co., boss grease refining and handling, 1923; The Amer. Perfumer, Assoc. Ed. Soap Sect., 1923; Comml. Solvents Corp., tech. supvr. 1924-25; chief chem., 1925 to date. Memb., F. A. I. C. (charter); Amer. Chem. Soc.; R. O. A.; University Club. Direct descendant Gerrit Frederickse Lansing, settled in Rensselaerwyck (New Netherlands) 1630. Hobbies: national defense, night school teaching (chem.), and Amer. Indian studies (especially languages). Address: Commercial Solvents Corp., Peoria, Ill.

Lathrop, Elbert C., director research and development, The Celotex Co., Dahlberg & Co., The Southern Sugar Co., The South Coast Co. Born, Greensburgh, Ind., 6 Oct. 1885; mar., Claudia G. Armstrong, Eaton, Ind., 27 Nov. 1912; children, 1 dau.; educat., Depauw Univ., A. B., 1907; Amer. Univ., Ph.D. 1916. Soil fertility investigations, U. S. Dept. Agri., Wash, D. C., biochemist, 1909-18; E. I. du Pont de Nemours & Co., Wilmington, Del., mgr. chem. dept., 1918-22; S. P. Sadtler & Son, Inc., Phila., vice pres., 1922 to date. Dir. Res. & Devel., Dahlberg & Co., and the Celtoex Co., 1925 to date, Southern Sugar Co. 1926 to date, The South Coast Co., 1927 to date. Ed. Longstreth Medal, Franklin Inst., 1912 award. Assoc. Amer. editor—"Allen's Coml. Organic Analysis", 6th ed. 9 vols. Articles on soils and fertilizers, etc. Contributions to tech. papers: technology corrosion; by-product recovery; insulating synthetic lumber. Memb., Amer. Chem. Soc., Amer. Inst. Chem. Eng., Amer. Soc. Test. Matls., Soc. Chem. Ind., Soc. Internatl. Sugar Technologists, Amer. Heating & Ventilating Engrs., Tech. Assn. Pulp & Paper Ind., Franklin Inst., Beta Theta Pi. Fellow Amer. Assn. Adv. Sci. Clubs: Cosmos (Wash., D. C.), Chemists' (N. Y.), Lake Shote Ath. & Olympia Fields County (Chicago). Hobby: golf. Address: The Celotex Co., 645 N. Michigan Ave., Chicago, Ill.

McCall, Donald A., treasurer, Digestive Ferments Co. Born, Waterloo, Mich. 1878; mar. Pearl May Moco, Detroit, 30 April, 1902; children, one son; educat., Chelsea H. S., Detroit Bus. Col. Digestive Ferments Co., 1903 to date. Memb., Meadowbrook Golf & Country Club; Nat. Town & Country Club. Hobby, touring by auto. Address: 920 Henry St., Detroit, Mich.

Nickell, Lloyd Francis, assistant vice-president, Monsanto Chemical Works. Born, Padua, Ill., 6 Feb. 1884; mar., Evalena Bowen, Grand Rapids, Mich., 25 Dec. 1915; children, 2 sons, 1 dau.; educat., Univ. Ill., A. B. 1909; A. M., 1911; Ph. D. 1913. Washington Univ., asst. prof. chem., 1913-17; Monsanto Chem. Wks., 1917 to date. Memb. Amer. Inst. Chem. Engrs., Amer. Chem. Soc., Alpha Chi Sigma, Delta Phi. Address: Monsanto Chem. Wks., Monsanto, Ill.

Attention Centers Upon the Future of

ACETIC ACID

PERHAPS no one chemical is occupying so prominent a place in the thoughts of as many persons at the present time as is acetic acid. The reason for all this very flattering interest now being focused upon this old-line chemical is a fairly simple and obvious one. It is the almost overnight development of a tremendously increased demand, brought about chiefly by the rapid growth of the lacquer and artificial silk industries.

The projected construction during the next twelve months of new rayon plants using the cellulose acetate process is a large enough factor in itself to justify the intense activity now being shown by producers of acetic acid. It has been said that many developments have been purposely delayed because of an uneasiness regarding pure acetic acid supplies in this country. It is logical to assume, however, that the enormous investments now being made in the rayon industry in this country are not being made without some positive assurance to these future consumers of an adequate supply with stable price conditions for acetic acid.

Domestic Acetic Acid Production

Year	*Pounds*	*Pounds for Sale*	*Value Dollars*
1919	64,175,275	53,516,597	4,264,044
1921	39,074,244	34,544,812	1,790,857
1923	62,133,245	57,652,129	4,154,838
1925	64,845,347	63,502,986	3,845,802

Domestic Acetate of Lime Production

Year	*Tons*	*Tons for Sale*	*Value in Dollars*
1919	84,478	76,955	2,682,232
1921	30,658	27,724	737,018
1923	80,788	72,294	4,763,403
1925	81,723	72,562	3,437,384

Because of the prominent place which it has always held and yet retains with regard to the acetic acid supply in this country, acetate of lime must receive first consideration. Any discussion of acetate of lime naturally involves a consideration of present conditions in the wood distillation industry because of the direct bearing of those conditions on production and prices of the acetate. Much has been written and spoken during the last few years concerning the passing of this once great industry. But despite these numerous requiems, it is well to bear in mind that the corpse is a fairly live one. In fact, at present it is the primary source of supply for—at the most conservative estimate—ninety per cent. of this country's acetic acid.

Another indication of the fact that the wood chemical manufacturers are still able to sit up and take nourishment is the price advance in acetate of lime early in August. The advance was from $3.50 per 100 pounds to $4.00 per 100 pounds for acetate of lime which, in turn, increased the price of 56 per cent. acetic acid fifty cents per hundred pounds, with other grades advanced in proportion. It is true that this was the first change in price since November, 1926, but even great emphasis placed upon that fact, failed to make the large consumers particularly joyful in the face of the advance. For acetic acid contracts, as at present constructed, are not made at a fixed price over a yearly period, as is the case with so many chemicals. The contracts are made on a ratio basis, with the result that any change in the price of acetate of lime is reflected immediately to the consumer of acetic acid.

According to the wood distillers, the basic reason for the advance in the price of acetate of lime was the lack of demand for charcoal. In that simple statement is contained a large part of the problem now besetting the wood distillation industry. That industry is primarily engaged in the production of charcoal. It represents large investments in timberland and in plants for this production. As important by-products, the industry produces methanol and acetate of lime. The story of another by-product, acetone, and how it was displaced by synthetic acetone, is an old one and need not be repeated. Methanol, too, suffered to a great extent upon the appearance of synthetic methanol, but of late conditions in that market have improved somewhat from the point of view of the wood distiller. To-day, he can find a ready market for all the methanol he can produce. The methanol market is extremely tight and prices have advanced. Of course, it will never again be so favorable as it was previous to the advent of synthetic methanol, but present conditions are extremely encouraging to the wood distiller. His chief problem, to-day, is to dispose of his charcoal at a favorable price. Consumption by the iron industry has fallen off because of improved and cheapened processes for electrolytic smelting.

Charcoal presents a bulky and hazard storage problem, so that after a certain amount is accumulated, the plant must shut down and when charcoal production ceases or declines, the production of methanol and acetate of lime also decline. Consequently a shortage ensues and the price of acetate of lime advances. Producing three items, as he does, the wood distiller is faced with the constant necessity of balancing one off against the other in an effort to arrive at prices on all three which will cover his total cost of production and give him a fair return on his investment. All three must be kept moving into consuming channels at the same time or he is forced to discontinue production.

Wood Distillers Foresee Change

To return to acetic acid, the wood distiller has been among the first to see the handwriting on the wall regarding the eventual "scrapping" of the acetate of lime step in acetic acid production. He realizes that that process is uneconomic, involves intermediate steps which should be wholly unnecessary, and that he will profit by eliminating them. The Brewster process was the first answer. After considerable difficulties at the start, this process has now been functioning on a commercial scale for about a year and a half. Those who have been interested in it, have been so well satisfied that they have recently increased production. Considerable publicity attended the preliminary operations of this process, so that little remains to be said except to repeat that acetic acid is made directly from the pyroligneous liquid by an ether extraction process and to add that it has already cut a considerable niche for itself in the field of acid production.

Other wood distillers are experimenting and installing other processes. Most of them are still in embryonic stage and are being carefully concealed until full grown. One other process, now being installed, seems worthy of mention at this time. That is the Suida process, the American rights to which have been purchased by a group in this country. The process consists of extracting acetic acid from the pyroligneous liquid, from which the alcohol has previously been removed, by passing steam over the liquid which is in a heavy and very cheap solvent, such as wood oil or cresol. The use of this process has been accompanied by a high degree of success in France and its effects upon the acetic acid market in this country will be followed with close interest. If the wood distillation industry develops a highly economic method of direct acetic acid production, it should prove very valuable for it will keep production in the hands of the old producers, and the price will not be dependent upon other basic materials. In addition, it should permit him to put a lower price on his charcoal, if the disposal of that product still presents a problem, without putting the combined return from charcoal, methanol and acetic acid below such a figure which will cover his costs of production and, at the same time, yield a reasonable profit. Of course such a process would solve all the industry's problems, but it should go a long way towards doing so.

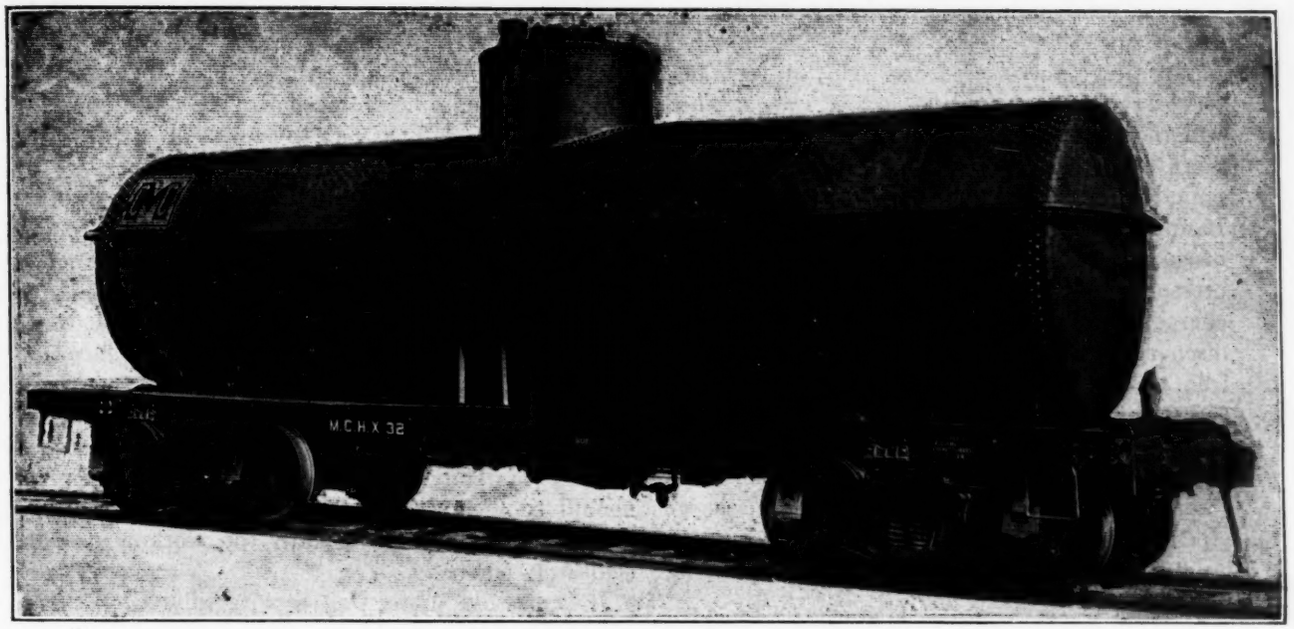
Canadian Process to Operate

The wood distillers, however, are not the only members of the chemical industry who have interested themselves in the problem of acetic acid production. During the war, a process was developed in Canada for the production of acetic acid synthetically, from calcium carbide. Production by that method has increased tremendously and has proven so satisfactory that an organization was formed to produce in this country, under the Canadian patent. Installation has been completed and production will begin this month. Here again is an additional factor in the domestic market whose potentialities are, as yet, unknown and whose development will be watched with interest. The important determining factor, in this case, is the price of the basic material. The tendency in the calcium carbide market at this time seems to be upward due to the increasing cost of power, but any number of things are likely to happen before that cost goes so high that it would make the production of acetic acid unprofitable.

The problem of acetic acid has assumed world-wide proportions, and it is no secret that everyone is searching for the ideal method of manufacture. Much has been said of the synthetic processes used by Germany, France and Japan, but there has as yet been no indication of any synthetic acetic acid from abroad breaking into this market. There are tariff and freight to be taken into consideration, so that it would take an extremely low cost of production to make the sale of imported acid in this country profitable. But the calcium carbide and Suida processes have been imported and it seems logical to assume that, if there were anything better, somebody would be putting it to work.

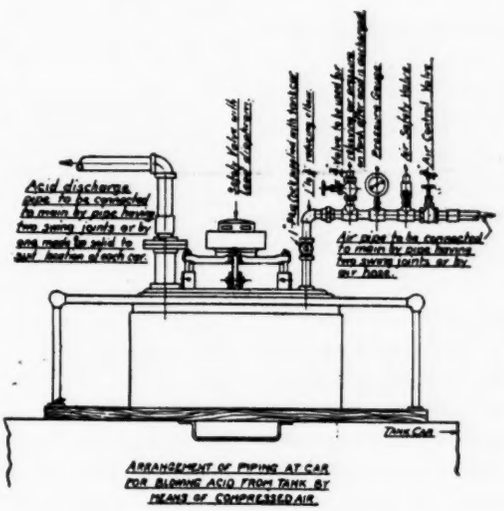
One Possible Solution

A catalyzer which would change alcohol directly to acetic acid through direct oxidation would be a big step in the right direction as would, doubtless, many other things. The important thing, however, at present, is that consumption of acetic acid is increasing by leaps and bounds. For some time to come, it seems likely that there will be a market for everybody's acetic acid, but, the consumer must be kept satisfied, for his investment and resources are tremendous. There have been pages in the history of the American chemical industry telling of the consumer being forced to go into the chemical business for himself. Acetic acid should not furnish another of those pages.



UNLOADING ACID TANK CARS

"Anything pertaining to chemicals carries with it an air of mystery from the viewpoint of the general public. There is also a false conception as to the dangers of the chemical business, the general impression being that the hazards are unusual and the accident percentage high. The opposite is actually the case as statistics will show. It is necessary, however, for the chemical operator to know his business, otherwise the hazard would naturally be increased."—National Safety Council.


Acid discharge pipe to be connected to main by pipe having two swing joints or by one made to be split at half length of each car.
Air pipe to be connected to main by pipe having two swing joints or by one hose.
Tank Car
ARRANGEMENT OF PIPING AT CAR FOR BLOWING ACID FROM TANK BY MEANS OF COMPRESSED AIR

There is a right and a wrong way of doing everything. When applied to the unloading of acid tank cars, the wrong way may easily prove disastrous. The relative efficiency of the method used is also reflected immediately to the manufacturer in terms of dollars and cents. So important is this often-overlooked problem and so helpful the information contained in this article that we have obtained permission from the Merrimac Chemical Company to pre-print this chapter from its forthcoming catalogue and handbook.

SULFURIC acid or oil of vitriol, and mixed acid, are shipped in single unit steel tank cars. Muriatic acid is shipped in rubber lined wooden tubs, six of which are mounted on a flat car; or in rubber lined, single unit steel tank cars.

The most economical means of discharging sulfuric ac id from tank cars is by the application of air pressure. Twenty pounds air pressure will raise the acid to a distance of about 20 feet which is ample in most cases to easily discharge the contents of a tank car into an elevated storage tank.

In order to insure the safety of the tank itself, and to guard against excessive pressure being applied, there is a frangible lead disk in the safety valve which will rupture at approximately 25 pounds. Not more than twenty pounds pressure, however, should be used unless absolutely necessary in order to avoid rupturing the lead diaphragm.

(I. C. C. Specification for Class III Tank Car No. 21, "frangible disk . . . rupture at pressure not higher than 30 pounds per square inch.")

The following method is to be followed in unloading the acid from the tank cars, and the various connections necessary are shown in the accompanying sketch.

(1) Open air cock to allow any pressure accumulated in the tank to escape.

(2) Remove cap or plug from the acid discharge pipe and connect up pipe to the acid discharging line. Be sure that this cap or plug is replaced when the tank is empty and the connection is broken again.

(3) Connect up air pipe according to the sketch.
(4) Make sure that all the bolts holding manhole plate, safety valve, etc., are tight, as they may have become slightly loosened in transit which will allow air to leak out of the tank.
(5) Turn on the air pressure, regulating it up to 20 pounds as shown on the gauge.
(6) If application of the air fails to start the acid discharging, shut off the air supply, release air pressure from the tank car by opening the discharge valve on the air end, disconnect the acid discharge pipe and make sure that this pipe is clear from the tank car to the storage. If this is clear, run a rod down thru the discharge pipe into the tank car which will clear any sediment which may have accumulated on the bottom of this pipe and thereby plug it; then connect up the discharge pipe again and apply the air pressure, after which no difficulty should be experienced in discharging the tank.

Discharging Muriatic Acid from Tank Cars

This acid can either by syphoned out of the tank car by means of a rubber hose or pumped out with a hard rubber pump located on the ground near the tank car, the suction of which is connected to a hose which is inserted into the tank.

Method to be followed in unloading muriatic acid tank cars:

(1) Remove the hard rubber cap from the 4″ pipe at the top of the tank. Be careful in removing this to avoid any accident from pressure which may have accumulated in the tank.
(2) Insert the suction end of the syphon hose or the suction pipe of the pump down thru this 4″ pipe until it strikes the bottom of the tank. In case a syphon is used, of course, this must first be set either by suction or by filling with water or acid according to the usual method of setting a syphon. Do not place any metal on the suction end of the hose which is inserted in the tank as damage may be caused to the rubber lining of the tank or to the rubber protection device on the bottom of this pipe.
(3) Be sure that the hard rubber cap is replaced after the tank is empty.

Remember that hard rubber fittings are brittle and should be handled with care.

Note.—New developments are being made in muriatic acid tank cars. In case a single unit steel rubber lined tank car is received, it may be possible to discharge this tank car by air pressure similar to the sulfuric acid tank cars, in which case special directions can be obtained from the Merrimac Chemical Company.

One of the most serious dangers in handling sulfuric acid which has been shipped in an iron tank is the formation of hydrogen gas by the action of the sulfuric acid on the steel body of the tank.

This gas is highly explosive when ignited, and for this reason the use of any light, except an electric flashlight or electric light with gas proof socket and connection, must be prohibited.

Caution—Gas in Tank

Should it become necessary to enter a tank, or other enclosure for inspection, to remove sediment, or for any other purpose, it must be done under the direction of a man who is thoroughly familiar with the conditions that exist. No man should be permitted to enter any tank, or other enclosure which has contained acid without wearing a gas mask, preferably an air line Atmos Mask. A heavy leather strap or thoroughly tested rope should be securely fastened around this body under the arms, and the other end should be securely fastened outside, where a fellow employee should remain until the workman inside shall fully emerge.

If inspection shows that repairs will have to be made, the tank should be washed out with water. After the first washing it is necessary to replace the plug and fill the tank with a water solution containing about 35 pounds of soda ash. The tank should remain filled for at least twelve hours. The solution should then be tested with litmus paper, and if it changes to a pinkish color it is still on the acid side and additional soda ash must be added. When the test shows no acid to be present the plug is opened and the tank allowed to drain.

Special precaution must be taken in gas from mixed acid tanks. This gas, so-called nitre gas, is very dangerous. A person inhaling even small amounts should be immediately placed in the care of a physician. It is not especially obnoxious to breathe; hence a person can get a dangerously heavy dose without any immediate discomfort. A sufficient amount of this gas will cause death several hours after the person has been exposed.

United States exports of insecticides, germicides, disinfectants, and deodorants during the first six months of 1928 amounted to 15,559,800 pounds valued at $3,080,300 as compared with 11,362,537 pounds valued at $2,664,388 for the corresponding period of 1927—an increase of approximately 37 per cent., according to the Department of Commerce.

The following table shows in detail the exports of these materials for the first six months of 1928:

	Pounds	*Value*
Nicotine sulphate	78,800	$75,500
Other tobacco extracts	1,583,000	366,100
Lead arsenate	698,500	84,600
Calcium arsenate	596,600	35,900
Other agricultural insecticides and fungicides	3,559,400	319,600
Household insecticides, disinfectants, deodorants, germicides, etc.	9,043,500	2,198,600
Total	15,559,800	3,080,300

Davison Chemical Co. plans to enlarge plant of Davison-Pick Fertilizers, Inc., at Gretna, La., at estimated expenditure of $175,000.

Is Your Plant Strategically Located?*

We publish this article as the first of a series on the subject of chemical plant conditions. Mr. Davis has conceived about every possible factor to be taken into consideration when selecting a plant site and his good example will be followed by the succeeding contributors all of whom will be competent authorities within the industry.

By Ralph Currier Davis, M. E.

THE location of an industrial plant is often an important factor in its success or failure. On it may depend our ability to serve customers satisfactorily, to obtain an adequate and continuous supply of raw material at minimum cost, to maintain a sufficient, competent, labor force and many other factors in manufacturing. Sometimes a poorly managed plant is able to enjoy a considerable measure of success because of a good location, while a well managed plant in a poor location has difficulty in competing.

Although a manufacturer may be operating successfully in a given location, he has no assurance that he will not be faced with the problem of plant location sometime in the future. Habits and customs, centers of population or trade, channels of communication and transport, are constantly changing. A plant which is operating successfully on a given sight may find, ten or twenty years later, that it is no longer economically well situated.

When the problem arises, a manufacturer will find that the selection of a proper location involves a number of economic factors, some of which are rather intangible. A satisfactory solution is one which is usually outside of the experience of the average manufacturing executive. Therefore, it is advisable to seek the aid of competent counsel.

Major Factors Affecting Plant Location

The major factors affecting the location of the plant, are (1) the relation of the site to material supplies, (2) its relation to the markets in which the product is distributed, (3) the character and availability of transportation facilities, (4) the labor supply, and (5) power.

In many industries the relation of the site to supplies of raw material may be the dominant factor in its selection. If the raw material is costly, heavy, or bulky, it may be more economical to ship the finished product than to ship the raw material. The farther the site from the sources of materials the larger are the reserve stocks of materials that must be maintained. More capital is tied up, interest charges on raw material inventories are larger, greater storage space is required, and handling charges may be increased. In addition, there is more danger that the flow of materials to the plant may be interrupted by transportation difficulties, with consequent losses due to interruptions to plant operations. In some industries, the material factor apparently is of prime importance. However, its influence may be modified considerably by the presence of other economic factors in the problem. The great saw mills necessarily follow the receding forests. But iron ore is shipped many hundred miles by lake or rail. As the proportion of the direct material cost to the total cost of the product decreases, the importance of the material factor decreases, although not necessarily at the same rate, because of the importance of storage and continuity of supply.

Sites and Markets

The relation of the site to markets may be very important in the case of small plants that serve a local or an emergency demand. Ice-cream plants are located in or near the cities that they serve. A machine-repair shop must be located near the industries that it expects to serve. Furthermore, there must be a sufficient number of plants that need such outside repair service, to support the plant. Often, plants which serve more than local demands may find it advisable to give the market factor first consideration in selecting a site. Nearness to its principal markets may increase the promptness with which the plant can serve its customers. If the cost of shipping the finished product is greater than the cost of shipping the raw material, nearness to markets may effect considerable savings in transportation charges. The desire of buyers to inspect and choose goods in large buying centers may make it advisable to locate near such centers. In general, it is natural for an industry to locate near the market that it serves. Where there are a number of markets, the selection

*Extracted from "Factory Organization and Management" published by Harper & Brothers.

of the proper location, in so far as the market factor is concerned, is a matter of balancing such considerations as population, purchasing power, and buying habits against one another.

Other things being equal, the best location, from the standpoint of transportation, is that location at which the cost of moving raw and worked materials to and from the plant is a minimum. It has been previously pointed out that transportation costs and service may be an important factor, tending to locate the plant near the source of raw materials or near the markets for the product. Those cities which are served by a number of railroads usually have more favorable tariffs and better service than those which are served by a single road. There will probably be a number of choices of routings for the incoming and outgoing shipments. The manufacturer who is located in a city served by a single road may find that his transportation costs are as high as, if not higher than, those of his competitor in the railroad center and that he has greater difficulty in getting cars whenever there is a car shortage. Many cities have a belt-line railroad connecting the principal roads. A car loaded at a plant on the belt-line can be switched to any road coming into the city. Transportation costs are reduced by the greater facility in loading and unloading cars and by the elimination of trucking to the siding of the particular road over which the shipment is routed. In large railroad and industrial centers, sites near such belt-line are very desirable and sell at high prices. In Cleveland, Ohio, for example, some are reported to be valued at $50,000 per acre or more. The junction points of railways and waterways often offer desirable market opportunities as well as transportation facilities. Obviously, if the trasportation cost is a small part of the total cost of the product, the necessity of locating near either the source of raw materials or the markets may be greatly diminished. These and similar considerations must be weighed when the transportation factor is evaluated.

Labor Supply Affects Choice

The character of the labor supply may affect the selection of a site in a number of ways. If wage rates are high, labor costs must be high also. However, this may be modified by the character, intelligence, and cooperativeness of the available labor. If the trades which must be used are highly unionized, the intruduction of modern management methods may be hampered and per capita production may be low. On the other hand, skill and familiarity with the work may offset these considerations. Skilled workers accustomed to earning good wages, cannot be moved from one community to another easily. Often they own their homes and have established ties of other kinds that bind them to the community. For these reasons, industries that otherwise are located uneconomically sometimes persist and thrive in the localities in which they originally developed. An important consideration is the adequacy of the labor supply to meet varying production demands. It involves the extent of training, welfare work, housing and other employee service work that must be undertaken. In some industries, such as the high-grade furniture industry, the extent, kind, and character of the labor supply may be the chief consideration in the location of the plant.

Cheap power often attracts industries, particularly those in which the power cost is an important element in the total cost of manufacturing. There are a number of large electro-chemical plants near Niagara Falls, due to the availability of relatively cheap electric power. Cheap coal has been an important factor in building up the Pittsburgh manufacturing district. With the majority of industries, power costs are a major factor to be considered in locating a plant. With the growth of large central stations and the development of super-power projects, an increasing number of concerns are purchasing rather than producing power, finding it more economical. They are relieved of a heavy investment in power-plant equipment. The operation of a power plant results in a considerable power charge whether the plant is producing or is idle. When power is purchased, the power charge fluctuates more closely with the fluctuation in the volume of production. Whether it is more economical to purchase or produce power depends to a large extent on the size of the plant, nature of the product, and the quality and cost of local power service. Those industries that use large quantities of steam in their processes, as in the manufacture of rayon, often find it more economical to generate their own power.

Minor Factors Affecting Location

The minor factors affecting plant location are (1) the cost of land and buildings, (2) the possibility of expansion, (3) service industries, (4) financial service, (5) water supply, (6) water and tax rates, and (7) labor legislation.

The cost of land and buildings varies considerably between manufacturing communities. The cost of desirable sites ranges from a few hundred dollars per acre or less, in the smaller towns and cities, to many thousand dollars per acre in many cities. In cities in which the building trades are closely organized the cost of erecting factory buildings may be high. The interest charges on land and buildings are often a considerable item in the indirect expense of manufacturing. Furthermore, if land is reasonably cheap, sufficient acreage can be acquired to permit the location of buildings in such a manner that their relation to one another will facilitate maximum production. They can be constructed to meet the needs of the particular business. If land is very valuable, the cost of land for certain types of construction, such as single story, sawtooth buildings may be prohibitive.

A related consideration is the availability of land for expansion. If a business prospers, eventually it may become necessary to erect additional buildings or to make additions to existing ones. If it is necessary

to erect new buildings at a considerable distance from the plant, administrative difficulties are created.

The presence of service industries may be important to some plants, particularly to the smaller ones. If the industry is not self-contained, it may require the services of foundries, machine shops, parts manufacturers, public warehouses, and various other service agencies.

The strength, progressiveness, and far-sightedness of the community are important factors. Their willingness and ability to co-operate in financing the activities of the company may contribute materially to its success.

To some industries, using large amounts of water in the generation of power or in industrial processes, the nature of the water supply and water rates may be important.

Taxes are an important item of indirect expense. The tax rates and their application in the communities under consideration must be investigated in selecting a plant site.

In some instances state labor laws may be a factor. Many of the Southern states have attracted plants from the North because their factory laws are less strict.

Plant sites may usually be grouped in four classes—those located in (1) large, (2) small, (3) suburban, and (4) specialized manufacturing communities. The last named class is really a special case of the three preceding classes.

Large Manufacturing Communities

Large manufacturing centers, such as Buffalo, Chicago, Cleveland, Detroit, and Philadelphia, have many manufacturing advantages to offer. They are served by a number of competing railroads. In many cases they are equipped with belt lines and in general have excellent transportation facilities. Usually, they have an abundant supply of all classes of labor. In most cases one of the greatest difficulties in building an organization is in securing sufficient minor executives and skilled labor. At most times, such help can be secured in the city on relatively short notice. Furthermore, trade schools and technical high schools are constantly maintaining the supply. Discussion groups, such as the sales, production, and employment-managers groups, often organized and conducted under the auspices of the local Chamber of Commerce, have a stimulating effect on executives, aiding in their development. The large manufacturing community is well equipped with theaters and other amusement places. Its amusement and educational advantages are such that the necessary amount of plant welfare work of this kind is a minimum. Often it is a good market for the product, particularly in the case of the small plant. It is well supplied with service organizations of the kind which have been mentioned. Power usually can be purchased from central stations at reasonable cost. This also is a distinct advantage for the small plant. Finally, the large city offers superior financial resources and services.

Against these advantages must be set a number of disadvantages of sufficient importance—to induce many manufacturers to move their plants from the larger to the smaller manufacturing communities or to establish branch plants in them. In the large cities, land is expensive and the number of desirable sites is limited, making expansion of the plant difficult. Taxes are relatively high. The cost of living usually is higher than in the small town and wage rates are correspondingly higher. In some of the larger cities, the labor situation in certain trades is dominated by powerful city federations of labor. If the trades which must be used are highly organized, there is a possibility of lower production per man and labor trouble. In the city the presence of small loft concerns in the industry may disorganize local markets and the labor situation. The distances which the workers must travel to and from their work are great. Sometimes a site may be suitable in other respects, but the distance from a car line and from the working-class residential districts may be such that it would be difficult to maintain labor forces. Many manufacturers feel that the appearance of their grounds and buildings is a good advertisement, and a factor making for the contentment of their working force. The closely built, smoky industrial districts of large cities offer little opportunity for beautifying the plant and its surroundings. The grounds of the National Lamp Works' laboratory at Nela Park, on the outskirts of Cleveland, are beautifully parked. The contrast with the appearance of many plants in the city is striking.

Small Manufacturing Communities

In many cases, the manufacturer in the small community is not hampered by conditions that add to the costs of the city manufacturer. Often he enjoys better labor conditions. His labor is more likely to be native-born and more intelligent. A larger percentage own their own homes and are permanently attached to the community. Because of lower living costs, they can enjoy a higher standard of living on a lower wage level. In many cases the plant is a dominant factor in the life of the community. For this reason it is possible for the plant executive to enjoy closer and more cordial relations with the working force, provided that they do not abuse the power which their position gives them. For these reasons, and the absence of powerful local labor organizations, the probability of labor troubles seems to be much less than in the larger cities.

Usually land is cheaper and construction costs and taxes are less. Sufficient land can be secured easily for present and future needs. The small town or city often has a highly developed community spirit. To induce manufacturers to locate in the community, such inducements as a free factory site or rebates of taxes may be offered. Its Chamber of Commerce may sponsor the sale of securities in the community and

induce local banking interests to finance the construction of a plant and the operations of the new company. Such inducements are tempting, particularly to the firm that is not strong financially, and often lead to the improper location of the plant. The executives are apt to overlook the fact that there are other economic factors in the location of the plant besides cheap land, plant, and taxes. The penalty for the disregard of these other factors may be the failure of the company, after a few years of operation, to the detriment of the community which has sponsored it.

As opposed to the advantages of the small community, there are a number of disadvantages. Educational and amusement facilities may be limited. If the company must build up its working force by bringing in workmen from other communities, this lack may make it difficult to maintain an adequate working force. The majority of the better workmen want proper educational facilities for their children and to some extent for themselves. In some instances, particularly in the company-owned towns of large corporations, it has been found desirable to establish public schools, company schools, apprentice training, or to engage in other educational activities. It may be necessary to make considerable expenditures for recreational and amusement facilities. If city workers are brought to the small community and such facilities as movies, theaters, and amusement parks are lacking, it may be necessary to supply them to keep the workers contented. Important executives who enjoy large salaries may feel the lack of social advantages, which may make it difficult to hold them.

The small manufacturing community may not have a broad labor market from which an adequate labor supply of all kinds can be drawn on short notice. If workers are imported in large numbers, housing problems may be created. Before a large permanent increase in the working force can be made, it may be necessary to make a considerable investment in workers' homes.

In addition, the small manufacturing community may be less desirable because of inferior transportation facilities, absence of a local market for the product and other advantages that the city can offer.

Suburban Locations

In recent years there has been a marked movement of manufacturers from the larger cities to suburban locations. In many respects, such locations combine advantages of the city and the small community, without their disadvantages. Suburban manufacturers are able to draw on the neighboring city for labor. Their employees are able to enjoy better living conditions, are more contented and probably more stable. Educational facilities usually are good. To a large extent, the employees can avail themselves of the amusement facilities in the city. In many cases the transportation facilities of the suburb are nearly as good as those of the city. While wage rates and construction costs may not be much lower than in the city, land costs and tax rates usually are lower. The more important executives can live in or near the city, enjoying the advantages of city life.

Certain cities have become noted for certain kinds of manufacturers. Akron is noted for its rubber products; Detroit for the manufacture of automobiles; Grand Rapids for furniture; Battle Creek for breakfast foods.

Specialized Manufacturing Communities

While such communities are special cases of the preceding classes, they have certain advantages peculiar to themselves which make it advisable to consider them separately. They have an abundant supply of labor skilled in the processes carried on in the industry. Often the community maintains trade schools which continually augment the supply. As a result, the amount of training which the individual concern must carry on is reduced. Because of the large number of concerns in the same industry, materials and supply dealers can carry larger and more varied stocks. The purchasing department can often obtain necessary materials and supplies on short notice from local sources. For the same reason, the specialized community probably is well supplied with various service organizations peculiar to the industry. It may be easier to finance operations because local bankers are thoroughly familiar with the needs of the industry. Similarly, a new concern in the industry probably will find it easier to dispose of its securities because local investors have the confidence born of previous successes. Finally, the fact that the concern is located in a city that is noted for the products that it intends to manufacture gives it a certain prestige.

The relative advantages of the different locations which have been discussed depend largely on the nature of the problem of the particular concern. In general, the large concern which is more self-contained with regard to its operations can settle in the small community to better advantage than the small concern. The city with its varied service organizations, excellent educational and amusement facilities, broad local markets, good labor supplies, cheap central-station power, and other advantages seems better for the small plant.

The modern manufacturer who finds it necessary to re-locate his plant or to establish a branch plant has a number of sources of information to aid him in the solution of his problem. Numerous books and articles on the subject have been written. Many chambers of commerce in manufacturing communities maintain industrial bureaus which furnish information relating to the economic advantages of their communities for manufacturing. The industrial agents of railroads and electric-power companies are glad to give similar information relating to locations on their lines. Census reports and various reports of the Department of Commerce are often helpful.

Natural GAS

*One of the Industry's New Raw Materials**

By R. T. Elsworthy, Ph. D., F. I. C.

NATURAL gas has probably been one of the most wastefully used mineral resources in the world. Most natural gas fields have been opened up in drilling for oil; the gas obtained, often in tremendous quantity, is usually of secondary interest and frequently no immediate opportunity has been available for supplying the gas as fuel for domestic and industrial consumption. Things cheaply obtained are usually wasted, a remark particularly applicable to the petroleum industry as a whole.

The only use of natural gas, till the last few years, has been for fuel, and those who have never seen gas wells or used natural gas can have little realization of the great boon it can be to a community. Most natural gas has a heat value of 1,000 B.Th.U., and costs from one to three shillings per thousand cubic feet. Frequently natural gas and coal are found together, as in West Virginia, U. S. A., and in the province of Alberta, Canada.

One of the outstanding chemical developments since the war, has been the utilization of water gas as a source of gases for the synthesis of ammonia, methyl alcohol and for the production of oils from coal. Natural gas similarly offers great opportunities as a source of gaseous hydro carbons. Where coal is also available, the utilization of natural gas for chemical manufacture seems a more efficient use than burning it as fuel, usually wastefully. When once the natural gas reservoirs are opened up, the field has a relatively short life and cannot be conserved. Coal on the contrary, cannot waste away if not mined.

Natural gas is mainly composed of the gaseous hydrocarbons of the C_NH_{2N+2} series. Unsaturated hydrocarbons are never present. Dry gases, that is, those carrying no hydrocarbons liquid at ordinary temperatures, consist chiefly of methane, while wet gases, from which gasoline can be recovered, contain larger quantities of ethane, butane, propane, pentane etc.

The following are typical analyses of gases from United States and Canadian fields:—

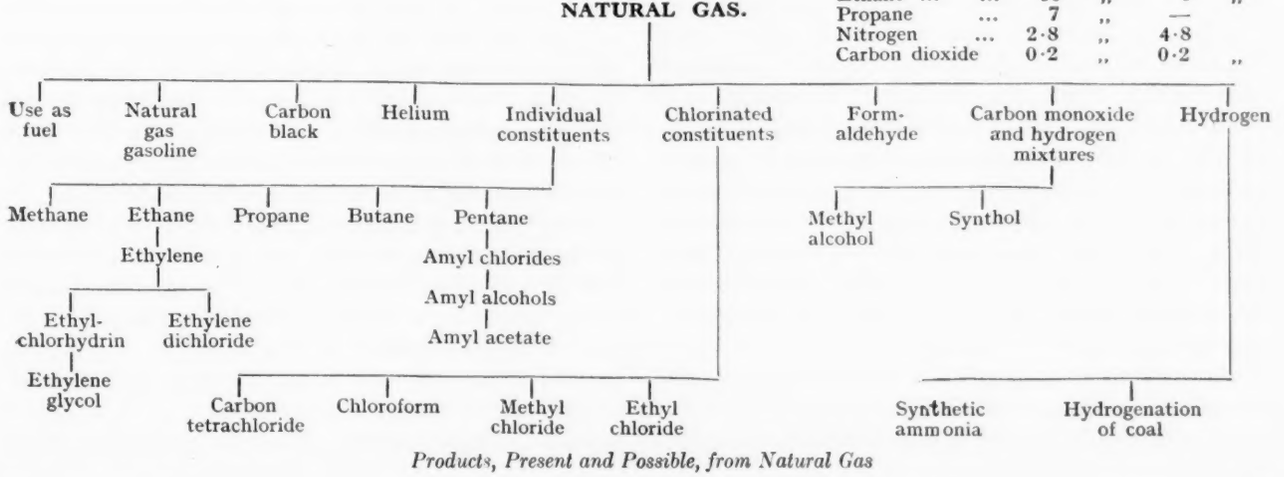
Propane, butane and pentane are also present in the gases with a high ethane content. These constituents can only be determined by liquefaction of the gas and a fractional distillation. The analyses given above were made by the ordinary combustion method.

Natural gas has been a source of gasoline for many years, and large quantities of gas are burned annually for the production of carbon black. Helium has been extracted on a commercial scale since 1921. During the last five years important organic solvents have been manufactured from constituents of natural gas. Some of these uses, together with other possible applications which may be developed during the next few years, are set out diagrammatically in Fig. 1. Over two hundred patents have been granted in the United States in the last twenty years, solely on processes of chlorinating hydrocarbons and derived

Reprinted from the Industrial Chemist, London.

TYPICAL COMPOSITION.

	Wet gas.	Dry gas.
Methane ...	60 per cent.	90 per cent.
Ethane	30 ,,	5 ,,
Propane ...	7 ,,	—
Nitrogen ...	2·8 ,,	4·8
Carbon dioxide	0·2 ,,	0·2 ,,



Products, Present and Possible, from Natural Gas

products, and almost as many on other methods of utilization of natural gas.

Over one billion gallons of natural gas gasoline were extracted from natural gas in the United States in 1927. This product is obtained either by compression and condensation or by absorption methods, using gas-oil or activated charcoal. The newer absorption methods, particularly the use of activated charcoal, are rapidly supplanting the older compression methods. Natural gas gasoline, being chiefly composed of the low boiling hydrycarbons, it largely used for blending with the higher boiling fractions obtained in crude oil distillation or in cracking processes.

Carbon Black

Carbon black is the fluffy black substance formed by the deposition of the solid products of incomplete combustion of natural gas. About 10 per cent. of the annual production of gas in the United States, amounting in 1926 to 130 billion cubic feet are burnt to obtain carbon black.

The usual type of plant consists of long steel frame buildings, covered with sheet iron. In these sheds the gas is burned at hundreds of small steatite burners set in rows of pipe. The draughts are carefully controlled and the product of incomplete combustion deposited on parallel sheet iron trays or channels set above the burners. These channels slowly move back and forward and scrapers are so arranged that the carbon black is automatically removed from the channels dropped into hoppers beneath and transported by screw conveyors to packing houses.

The process if very inefficient, an average of about 1½ lb. of carbon black being formed from the combustion of 1,000 cubic feet of gas, containing over 40 lb. of carbon. Carbon black is used chiefly in the manufacture of printing ink and as a filler in automobile tires and other rubber goods. From some points of view, particularly as regards the problem of de-inking newsprint, it would, be desirable if a substitute for carbon black could be found.

Helium

Helium has been extracted from natural gas in a plant at Forth Worth, Texas, built by the United States Government in 1921. Over 30 million cubic feet have so far been recovered, much of which has been used in the U. S. airships, "Shenandoah" and "Los Angeles". It will be remembered that the "Shenandoah" met with disaster in 1925, when more than half of the crew survived the complete destruction of the airship. It was the opinion of experts that the saving of life was solely due to the ship being inflated with helium. It is reported that a second government helium plant will shortly be established in Texas.

Many of the natural gases in Canada contain small amounts of helium. Unfortunately, they are usually in fields where the supply is small and even if extraction processes could be operated efficiently on gases only carrying 0.3 per cent., it is doubtful if the quantity obtainable would be economically valuable. Much depends on what new industrial uses for helium are developed. The most promising use at present, other than as an inflating gas in airships, is for the supply of a helium-oxygen atmosphere for deep diving work. The use of helium being much less soluble in the body fluids than nitrogen, makes it possible for the period necessary for the decompression to be lessened considerably and thus permits of longer working time under water or greater depths to be reached.

The Separation and Processing of Constituents

The most important chemical developments of the United States, concerned with the utilization of natural gases during the last few years have been productive of ethylene dichloride, ethyl glyco, and the various esters and others made from these compounds which are finding many applications in the lacquer industry. Amyl chloride, alcohols and esters are the result of other recent developments. Some of these compounds at the present time are not produced direct from natural gases but from the lighter fractions of natural gas gasoline. Unsafe hydro-carbon gases obtained in the cracking of gasoline afford a most satisfactory source. Many types of natural gas would be equally suitable for treating by a cracking process.

The production of ethylene dichloride by the Union Carbide and Chemical Corporation is a recent achievement. This product is made by first separating ethane from natural gas by liquefaction and fractional distillation, and then cracking it by passage through copper, porcelain or earthenware tubes at about 600°C. The ethylene so produced is separated, liquefied and mixed with liquid chlorine in the proper proportions and the chloride formed is drawn off.

Ethylene dichloride, selling at six cents a pound in the United States is finding many important uses, both as a solvent and for the production of other chemicals such asglycol diacetate, ethylene diamine, succinic acid and others.

Ethulchlorhydrin is another important compound which is the starting point for the production of ethlene glycol. A number of patents have been taken out for the preparation of ethylchlorhydrin, most of them covering some modification of the reaction between ethylene and a solution of free hypochlorous acid and a hypochlorite. The separated and purified chlorhydrin can be converted into ethylene glycol[4] by hydrolysis with sodium bicarbonate solution.

Ethylene, obtained from cracked petroleum gases, or by cracking ethane from natural gas, is mainly used in commercial manufacture. Ethylene gylcol is finding many uses. It is the ideal liquid for an anti-freeze for motor cars radiators, boiling at 197°C. and mixing in all proportions with water, alcohols and glycerol. Large quantities are consumed in the manufacture of low-freezing dynamite. It can be bought in carload

lots at 30 cents per lb. and is thus not much more expensive than glycerol. The production of ethylene glycol on a commercial scale has made possible the development of the various glycol oxides and alkyl ethers which are good solvents for cellulose esters resins and gums and are becoming of much importance in the lacquer industry.

Diethylene glycol, ethylene glycol mono ethyl ether (cellosolve) and ethylene glycol mono butyl ether are commercially available.

Another recent development is the commercial production of derivatives of pentane by the Sharples Solvent Corporation. A mixture of normal and iso-pentanes are first obtained from distillation from the more volatile fractions of natural gas gasoline. This mixture is then chlorinated, giving most of the monochlorides and dichlorides. By fractionation the various isomers can be separated, and by subsequent hydrolysis the various amyl alcohols prepared. Amyl esters are also produced. The chief use of the alchols and acetate at the present time is for lacquer solvents. The great range of substantially pure isomers makes many interesting syntheses possible and all these compounds are commercially available.

Chlorination

Although a great number of patents have been granted covering the production of methyl chloride, chloroform carbon tetrachloride and other chlorinated derivatives of the simpler paraffin hydrocarbons, it is not known that there is any well-established commercial production of these compounds, mainly perhaps because the market is comparatively small.

Methyl alcohol was produced for a time by the hydrolysis of chloride, made by chlorinating natural gas, but the decline of the market after the war, and the recent production of synthetic methyl alcohol make such a process unprofitable. With the increasing use of these compounds, methods of production from natural gas should be revived.

Much experimental work has been carried out on the partial oxidation of the lower hydrocarbons, looking to the production of formaldehyde, and interesting results have been obtained. Supplies of cheap methane are available in the high methane gases in Western Canada, where it could probably be obtained for 2d. to 3d. per 1,000 cubic ft., both for the raw material and for supplying the necessary energy. It is doubtful in view of the great development of synthetic methyl alcohol whether any direct oxidation process would be economical.

The reaction between methane and steam has been the subject of many classical investigations. By choice of conditions almost any desired mixture of hydrogen and carbon monoxide could be obtained. If cheap oxygen were available, such as is promised by the recent development of high efficiency, high amperage electrolytic cells, suitable mixtures might also be produced by partial combustion of methane and oxygen under pressure in some form of bomb or gas engine, at the same time usefully recovering some of the energy liberated by the reaction.

The cost of the hydrogen-carbon monoxide mixtures, prepared from natural gas, compared with the cost of similar mixtures obtained from coal, would depend on many factors, and has not been carefully investigated.

Natural Gas as a Source of Hydrogen

The preparation of hydrogen from natural gas has been suggested. Investigations have been carried out in the Bergius experimental station at Rheinau, on the commercial possibility of converting the methane in the exit gases from the Bergius process into hydrogen, and patents have been taken out. Methane is mixed with steam and decomposed into hydrogen and carbon monoxide in its passage through a brick-filled tower at a temperature of 1,100°C. This mixture is then passed with more steam over an iron catalyst at 700° C., giving carbon dioxide and more hydrogen. The carbon dioxide is then removed, giving relatively pure hydrogen suitable for hydrogenating more coal. The same process could be applied to high methane natural gas.

Natural gas is practically unknown in England, though for some years there was a small flow from a boring at Heathfield, Sussex, which, when first drilled, had a gas pressure of 150 lb. per sq. in. There are no commercial supplies of natural gas in India, Australia or New Zealand, though small flows have been opened up from time to time in the latter countries.

Canada is the only Dominion where natural gas occurs in large quantity. The consumption in 1926 was 18,000,000 cubic feet, and the actual production at the wells very much greater. The two chief gas-producing areas in Canada are south-western Ontario in the east and the Province of Alberta in the west. The fields in Ontario have been yielding gas since 1890, and they are now showing signs of depletion. Due to the great activity in drilling for oil in Alberta, especially in the foothills of the Rocky Mountains, large quantities of natural gas are being opened in the west.

The chief centre of interest at present is the Turner Valley field, 40 miles south-west of Calgary. In 1923 the Royalite Oil Company, a subsidiary of the Imperial Oil Company, drilled a well, Royalite No. 4, to 3,740 feet, which was deeper than any previous drilling in that field. A flow of 20,000,000 cubic feet of wet gas was struck, and when the gate valve was closed the pressure was estimated to rise to 2,500 lb. per sq. in., lifting 94 tons of iron casing through the top of the derrick. The gas soon after became ignited, and was not extinguished until three weeks later. This well has since yielded over 500,000 barrels of naphtha and probably over 25,000 million cubic feet of gas.

During the last year three or four of the wells in the vicinity have been completed, giving gas flows of five to ten million cubic feet daily, and several hundred barrels of light oils. There are at least 20 wells which may be expected to come into production during

1928. Gas from this field is piped to Calgary, where it is supplied to about 15,000 consumers. The maximum daily consumption on a cold day is about 35,000,000 cubic feet. For at least six months of the year, however, the consumption is very small.

There are other fields in Alberta, where large volumes of gas have been opened up in drilling for oil. In the Wainwright field in Central Alberta there are several wells giving flows of about 5,000,000 cubic feet a day. Large volumes of gas are available in Southern Alberta, near the international boundary. One well was recently drilled which gave an open flow of 50,000,000 cubic feet a day, and has a rock pressure, when closed, of 1,180 lb. per sq. in.

In many of these wells it is impossible to conserve the gas by keeping the well shut in. When the gas carries gasoline the owners naturally wish to recover and sell this gasoline. In many wells the pressure is so great that it is unsafe to close off the well entirely.

Surveys of the natural gas in Alberta have been made by the Dominion Department of Mines and analyses of representative gases from all the fields are on record.

Possibilities of Gas Utilization in Alberta

If the present rate of drilling for oil continues in Alberta, very large quantities of gas for which there is no possible domestic market will be available in the next year or two. Alberta, too, has one-sixth the coal resources of the world, and is thus abundantly supplied with fuel, even if all the natural gas was utilized for chemical manufacture. The possibilities of developing the coal resources in combination with the gas are also great. Salt can be obtained from deposits 300 miles north of Edmonton, although the brine which is available from many of the wells in certain fields would probably be satisfactory for the production of chlorine for chlorination. Comparatively cheap hydro-electric power, both developed and potential offers other great advantages. The chief handicap is the distance of markets for the products that might be manufactured.

Efficient utilization of Canada's natural gas resources will add greatly to her prosperity and wealth.

Foreign Trade Opportunities

Ammonia sulfate	*32779	Swatow, China	Purchase.
Borax	*32709	Mannheim, Germany	Agency.
Casein	*32710	Urach, Germany	Do.
Chromic acid	*32788	Leipzig, Germany	Purchase.
Coal-tar dyes	*32708	Breda, Netherlands	Sole agency.
Coal-tar intermediates	*32836	Leipzig, Germany	Purchase.
Explosives	†32729	Bogota, Columbia	Agency.
Fertilizers	*32779	Swatow, China	Purchase.
Nitrocellulose solvents for lacquers, and pigments.	*32787	Meiningen, Germany	Do.
Oil, linseed	†32731	Habana, Cuba	Agency.
Paints, roof, and linseed oil.	†32731	do	Do.
Plastic materials, synthetic.	*32710	Urach, Germany	Do.
Rosin	†32691	Vienna, Austria	Do.
Rosin, gum and wood	*32707	Dresden, Germany	Do.
Rosin and turpentine	*32709	Mannheim, Germany	Do.
Soda, caustic	†32712	Amsterdam Netherlands.	Both.
Turpentine	†32731	Habana, Cuba	Agency.
Do	†32738	Buenos Aires, Argentina.	Do.
Varnish for airplanes	†32692	Milan, Italy	Either
Agricultural chemicals and animal dips.	*33036	Santa Fe, Argentina	Agency.
Beeswax	*33050	Dressau, Germany	Both.
Do	†33063	Hamburg, Gerany	Agency.
Black, acetylene	*33112	Worms, Germany	Purchase.
Blue-printing chemicals	†33002	Berne, Switzerland	Either.
Borax, boracic acid, cream of tartar, tartaric acid, and Citric acid.	*33073	London, England	Do.
Ceresin	†33109	Batavia, Java	Do.
Chemicals, industrial	*33073	London, England	Do.
Chemical specialties, industrial.	†33075	Athens, Greece	Agency.
Chemicals for the leather industry.	*33138	Obertshausen, Germany.	Purchase.
Chemicals for the rubber industry.	*33072	Para, Brazil	Do.
Cleaning fluids	*33096	Guaymas, Mexico	Agency.
Explosives, black powder, and blasting caps.	*33110	Mollendo, Peru	Purchase.
Fertilizers of all kinds	*33113	Oslo, Norway	Agency.
Oxides, metallic	*33073	London, England	Either.
Paints (enamels) and varnishes.	†33076	Berlin, Germany	Agency.
Paints, enamels, and varnishes.	†33074	Breslau, Germany	Do.
Paints, quick-drying, enamels, and pyroxylin lacquers	*33077	Leipzig, Germany	Do.
Paints and pigments	†33075	Athens, Greece	Do.
Paints and varnishes	*33012	Valparaiso, Chile	Do.
Do	*33122	Nantes, France	Do.
Pigments	‡33070	Osaka, Japan	Do.
Pyroxylin sheets	*33111	Palermo, Italy	Purchase.
Rosin	†33063	Hamburg, Germany	Agency.
Soda ash	†33071	Toronto, Canada	Either.
Solvents, powder	*33096	Guaymas, Mexico	Agency.
Black, carbon	†32863	Paris, France	Sole agency.
Do	*32987	Berlin, Germany	Purchase.
Black, carbon and battery	†32985	Hamburg, Germany	Do.
Caustic soda and potash	†32848	Havana, Cuba	Agency.
Charcoal, beech retort	*32858	Halle, Germany	Purchase.
Chemicals—			
Industrial	†32865	Brussells, Begium	Both.
Soap-making	†32848	Habana, Cuba	Agency.
Chemical specialties	‡32864	Hamburg, Germany	Do.
Cleansing compounds and polishes for furniture, Leather goods, linoleums, and metals.	*32946	Neuchatel, Switzerland.	Do.
Cream of tartar	*32847	Bromley, England	Either.
Insecticides	*32946	Neuchatel, Switzerland.	Agency.
Matches, safety	†32860	London, England	Do.
Oils, essential	†32848	Habana, Cuba	Do.
Paint, luminous	*32907	Rosario, Argentina	Both.
Paris green	*32859	Calcutta, India	Purchase.
Rosin, copal, and turpentine	†32881	Hamburg, Germany	Agency.
Sulphur	†32841	do	Do.
Varnish (coatings), insulating, waterproof.	*32862	Geneva, Switzerland	Sole agency.

The annual production of dyestuffs in France is now estimated at 18,000 metric tons, or three times the production of 1921, which was 5,500 tons, according to "L'Exportateur Francais." The Etablissements Khulmann produces more than half of the entire French production (9,900 tons in 1926), followed by the Colorants de Saint-Denis and Saint-Clair du Rhone.

In 1913, France imported from Germany half the dyestuffs it used: In 1921, 20 per cent. of the consumption was imported (1,440 tons out of 7,000 tons); in 1923, 11 per cent. (1,400 tons out of 11,500 tons); and in 1927, 8 per cent. (1,570 tons out of 19,500 tons). The French industry now produces one-fourth as much as Germany, and the recent sales agreement between the I. G. Farbenindustrie and the French producers gives France the right to keep the existing production ratio in its expansion activities.

Deutsche Ammoniak-Vefkaufs-Vereinigung, G.m.h.H., of Bochum, combining by-product ammonium sulfate interests of German coke gas plants, reports a production in 1927 of 366,616 tons sulfate, of which 66,000 tons were carried over into the current year as stocks on hand. The 1927 production was 22.3 per cent. above the 1926 level. An additional outlet was found last year by this combine in the delivery of ammonia to the Chemische Werke Lothringen for processing to ammonia sulfate-nitrate. A significant feature of the Ammonia Sales Union's annual report is that it exported abroad most of its stocks of ammonium chloride in 1927, reports Trade Commissioner William T. Daugherty, Berlin.

The Ammonia Union, which is a member of the German Nitrogen Syndicate, has contracted to sell the synthetic ammonia products of the Mont Cenis Company.

A Review of Some Papers from the Institute of Chemistry

AFTER the intensive study given to chemistry in its relation to agriculture during the early sessions of the Second Annual meeting of the Institute of Chemistry, American Chemical Society, at Northwestern University, Evanston, Illinois, the discussions of the closing weeks became much more general in nature. Among the subjects considered during the last three weeks were research catalysis, hydrogenation, organic chemistry, anti-oxidants, petroleum research, resins, lacquers, newer chemical hazards, chemistry and health, chemistry and vital processes, sanitation, teaching of chemistry, modern ceramics, metals and alloys, and chemistry and national defense. Although space does not permit a complete resume of all of the addresses devoted to these subjects, a few are briefly summarized below.

Science has progressed in advance of civilization, declared Sir James C. Irvine, acting Chancellor of St. Andrew's University, Scotland.

Chemistry is a philosophy, working in man's mind, leading him to search for fundamental truth and in the end to power in world affairs. Science knows no frontiers.

In England in the middle of the seventeenth century, the chemical factory was represented by little more than a dye-house, the powder mills, breweries, tanneries and iron smelting furnaces scattered over the provinces.

Robert Boyle formed a fraternity of youths scientifically inclined, who called themselves "The Invisible College."

Eventually this fraternity became the "Royal Society," which is still the leading scientific body in Great Britain.

Boyle and his followers gave us the first definite ideas of the nature of gases and of the cause of combustion, but more than a century was to elapse before the real significance of these discoveries became apparent.

At the end of the eighteenth century came a rush of discoveries. The chemist, hitherto confined almost exclusively to solids and liquids, was suddenly confronted with a whole new field of exploration.

The equivalent change of to-day lies in man's conquest of the air as a medium for flight after countless centuries in which his movements were confined to land and water.

Thomas Midgley, Jr.

Thomas Midgley Jr. of Dayton, Ohio, discoverer of ethyl gas and an authority on synthetic rubber, told the institute that it was hard beating nature.

As long as rubber can be sold for about 20 cents a pound, and the territory available for growing rubber is being extended, synthetic rubber will have no status.

By developing bud-grafting, by which the bud of a healthy tree makes a poor tree yield, the natural resource of rubber may be increased 100 per cent. over the present planting.

Of course the United States might have its supply of rubber cut off due to war interference with overseas transportation. In that case the increased development of the growth of the Guayule shrub now raised in this country in California would supply our emergency needs until sufficient plantings were made to supply our normal requirements.

This probably could be done as quickly as a plant could be built and put into commercial operation for making synthetic rubber, but it still remains for the chemist to make a synthetic product equal to the natural product in the physical properties of the vulcanized material.

Three well known figures in the chemical field who were active in the discussions during the closing days of the Institute of Chemistry. Left to right they are Benjamin T. Brooks, Sir James C. Irvine and L. V. Redman.

Dr. Frank C. Whitmore

By harnessing the atom, chemists, working with things they cannot see, have changed poisons into perfumes, dyes, valuable drugs and explosives, Dr. Frank C. Whitmore, head of the Chemistry Department of Northwestern University, declared at a conference on modern structural organic chemistry.

Only a few years ago, atoms were regarded as rather imaginary and theoretical things. Nowadays we know as much about the atoms as we do about anything in the world.

Atoms are really the bricks or building stones of which material things are made up. The chemist at the present time has learned enough about these atoms so that he can put them together and build them into complicated materials with almost the same skill and ease that the modern builder can use bricks and stones and mortar.

Professor B. S. Hopkins

Professor B. S. Hopkins, University of Illinois told the institute of the efforts of science to get to the "absolute zero" of the temperature scale by the use of a substance called "galolinium sulfate," one of the rare elements. At absolute zero, he explained, molecules of matter cease to move entirely.

Chemistry is developing the field of "rare earths". Stripping the elements of their technical names—cerium, thorium, neodynium—these rare earths are now used in the manufacture of electric light and radio bulbs, cast iron, cigaret lighters, seasick cures, fine grades of optical glasses for microscopes and telescopes, antiseptic dressings, porcelain and china glazes and allied lines. The big problem confronting the "rare earth" chemist is that of lowering the temperature to "absolute zero."

Sir James C. Irvine

Chemists are making life long and merry, according to Sir James C. Irvine. Synthetic food, treated with light rays to insure all the vitamin content that nature has created and in addition containing all the palate-teasing qualities that the best chefs can devise, will be plentiful and inexpensive. People will have more leisure to enjoy this food and other comforts of life, to which science is adding almost daily, for chemists believe they are on the way toward approaching Methuselah's span of life.

While man comes in continuous contact with fruits of the chemists' laboratory, the most important contribution this class of scientist has made is in preserving and prolonging life.

He denied that scientific products conduce to a monotonous existence, pointing out the joy and diversity they have added to living.

Practically none of the inventions which make our daily life more enjoyable would have been possible without chemistry. Electricity could not be used until the chemists had prepared steel, a metal strong enough to support the powerful oscillations of electric-driven machines.

Airships would not have been possible had not the chemists discovered alloys such as aluminum, which are both light and strong. Balloons and dirigibles use helium gas, a chemist's discovery.

The chemist has added to personal comfort by refining all the fabrics in common use and inventing more to add to those we had known for years. Through his brilliant colors he has made decorative articles cheaper and more available.

Life no longer is the haphazard matter that it was before the chemist tested drinking water and laid down rules for purifying food and for sanitation. He it was who placed the use of medicinal drugs on an exact basis.

The work of greatest importance now is the closer union which is springing up between the chemist and the physiologist. Probably the most important work to be done in the next few years is studying the changes in the human body.

Dr. Benjamin T. Brooks

Dr. B. T. Brooks, described the economies in petroleum refining.

More than $500,000,000 a year is being saved by the improvements in refinery technology. Most of this saving has been passed on to the public in cheaper prices for gasoline and other petroleum products.

Research goes on. So far it has informed us of the anti-knock value of motor fuels and has greatly improved the average motor fuel in this respect. It has, along with engineering, perfected cracking processes; produced better lubricants in better yields and at lower cost; aided in the finding of new pools; reduced refinery losses; reduced loss by fire; saved many millions of barrels of crude oil through the study of emulsions; reduced labor costs throughout the refinery.

Refiners are now considering greater diversity of products. Through the aid of chemistry we expect soon that resins, waxes, soap stock, paper sizing solvents for lacquers, paints and varnishes and scores of special chemicals for special industrial uses will be made from petroleum.

Dr. L. V. Redman

Scientific research is the one form of gambling in which skill plays the leading part, declared Dr. L. V. Redman, director of research of the Bakelite Corporation.

The stakes are for big money and big discoveries, and the gamble is with time and ingenuity, he said. One investment of $300,000 brought in a dividend of 2,800 per cent.

But it took almost ten years for the yield to come, and at no time was there any certainty of success.

The most careful judgment must be used in deciding what new products and new processes should be the

subject of research. Scientific effort and research should not be spread over too large a field.

A few thousands of dollars spent successfully on research may mean that many more times the original outlay will have to be spent before the work can be put on a manufacturing basis. All this manufacture would have to go out before any profit can be made.

Professor Donald B. Keyes

Successful electro-deposition of aluminum on metal, long a problem for science, was announced by Professor D. B. Keyes, University of Illinois. By means of this aluminum plating, billions of dollars may be saved, he predicted, in a large field of industry ranging from the manufacturer of kitchen pots to that of locomotives.

Pure aluminum will withstand the corrosive action of most concentrated acids and all common sulfur compounds. These agents cost industry to-day billions of dollars due to their intense corrosive action.

Aluminum alone has very little tensile strength or elasticity. This prevents its use as a structural material in spite of its light weight. The aluminum alloys are superior in these properties, but will not stand corrosive agents. It therefore becomes necessary to apply a thin continuous coat of aluminum free from holes, to steel and other metals.

"This has been done at the University of Illinois by a new and different method of electroplating. It is impossible to electro-deposit aluminum from a water solution. The new method makes use of organic metallic complexes that are liquid at ordinary temperatures, or at temperatures slightly above.

Dr. Victor Coffman

Science may harness the sun to produce sugar, may turn the waste of the present era into the foods of the future, may apply light to living organisms to aid in the growth of others and achieve similar miracles in the decades to come, but it must always stop short of the development of synthetic life in the complex form of man, according to Dr. Victor Coffman, E. I. du Pont de Nemours & Co., Inc.

The greatest advance in the field of synthesis, has been made in the production of fuel. When our supplies of petroleum fail, we will be able to use liquid fuels made by the distillation of coal. If coal fails us, we can make alcohol—for heating—from cellulose, a farm waste, or from water gas. Blast furnace wastes in form of water gas are now being utilized for this purpose.

Scientists are now searching for a chemical agent that will accumulate the heat of the sun and store it for us. Work is being carried out on this line in England and France. Minor quantities of sugar have already been collected from the light of the sun's rays, but the right kind of catalyst must be found before the work can be done on a larger basis.

Science's search for two new elements was announced by Professor B. S. Hopkins, University of Illinois at the American Chemical Society's Institute at Northwestern University.

Both should be like radium in being radio-active, and both should be short-lived; that is, they should disappear soon after their isolation.

Elements Nos. 85 and 87 are still unknown. The first should resemble iodine and the latter should be like the metals cesium, rubidium, potassium and sodium.

Beyond the limits established by hydrogen and uranium we have no knowledge. There may be many elements lighter than hydrogen and there may be whole series of unknown elements heavier than uranium.

New Incorporations

Interstate Cement Corp., Wilmington, cement, rock, limestone, rock clay. 5,000 shs com. Corp. Trust Co. of America, Wilmington, Del.

H. M. B. Mfg. Co., Pittsburgh, anti-freeze compound known as O Boy. $30,000. Capital Trust Co. of Delaware, Dover.

Furniture Fumigation Corp., New York, fumigation products. $10,000. S. M. Newman, 570 Fifth Ave., New York.

Color Craft Chemicals Corp., New York, chemicals. $20,000. E. I. Wechsler, Madison Av., New York.

Hirsch Laboratories, New York, drugs, chemicals. 10,000 pf. 100 shs. com. Slavin & Leichtman, 11 West 42 St., New York.

Palisade Converting Co., Newark, N. J., textile products. $100,000.

Schenckels, Inc., Newark, N. J., dyeing and cleaning. 100 shs. com. Ginsburg & Simon, Newark, N. J.

Powerful Products Corp., Paints, varnishes. $100,000 pf., 25,000 shs com. G. J. Lesser, 191 Joralemon St., Brooklyn, N. Y.

Sunset Press Allied Companies, San Francisco, paper products, 150,000 shs com. Corp. Trust Co. of America, Wilmington, Del.

Industrial Paper Corp., New York, paper. $300,000, 30,000 shs com. U. S. Corp. Co., Dover, Del.

Fuller Co., Catarauqua, Pa., minerals. $1,000,000. Delaware Registration Trust Co., Wilmington, Del.

Wolf Gas Inc., Wilmington, gases. 10,000 shs com. Corp. Service Co., Wilmington, Del.

Clarke-Howard Mfg. Co., Yonkers, celluloid articles. $10,000. Diamond, Abrhams & Strauss, 270 Mdaison Ave., New York.

Physicians Chemical Co. Inc., Newark. $75,000 pf, 500 shs com. H. Silverstein, Newark, N. J.

American Chemical and Engineering Co., Paterson. $100,000. C. C. Stalter, Paterson, N. J.

Italian-French Petroleum Holding Corp. of New Jersey, Paterson. $10,000. John M. Noland, Paterson, N. J.

Swan Finch Mfg. Co., Wilmington, petroleum. $500,000. Corp. Trust Co. of America, Wilmington, Del.

Conqueror Lead Co., Wilmington, minerals. $50,000. Corp. Trust Co. of America, Wilmington, Del.

Development of Improved Heating Apparatus Makes

BRANDING

A More Practical Means for Marking Chemical Containers

By A. C. Flothow

By keeping the trade-mark or company name constantly in the public eye, the manufacturer secures direct advertising and the valuable tie-up in the consumer's mind. Proper care and attention given to the marking of chemical containers presents a simple and logical means in accomplishing this result.

THE art of branding—if it may be called an art—has come into its own recently. Branding is visualized by most of us as the old method of heating a branding iron in a forge or fire. This method is obsolete and has been discontinued for all practical purposes for some time.

The reason for this is that the operation of branding was too slow and cumbersome. The come-back of branding and its importance to industry generally is due to the fact that within the last few years there have been new types of branding irons placed on the market. Chief among these is the gasoline. This equipment is so constructed that a brand of any kind—plain lettering, script lettering, monogram or special design—can be placed on the end of a gasoline blow torch, tubular in shape. This torch heats the brand in a few minutes and makes continuous branding possible.

Then there are the various types of electric branding irons that have been greatly improved in the last few years, and also the gas and air equipments. All of these have many uses.

The most important feature of branding is that of the advertising value. No one will dispute the value of advertising. We need only think of Coca-Cola or Campbell's Soup—two of the outstanding products that demonstrate the possibilities derived from intense and continuous advertising. Another important feature is that of branding for the purpose of eliminating theft. Every large industry loses a great many tools. If they have a fleet of trucks, tires are stolen, etc. All of this theft can be eliminated by branding.

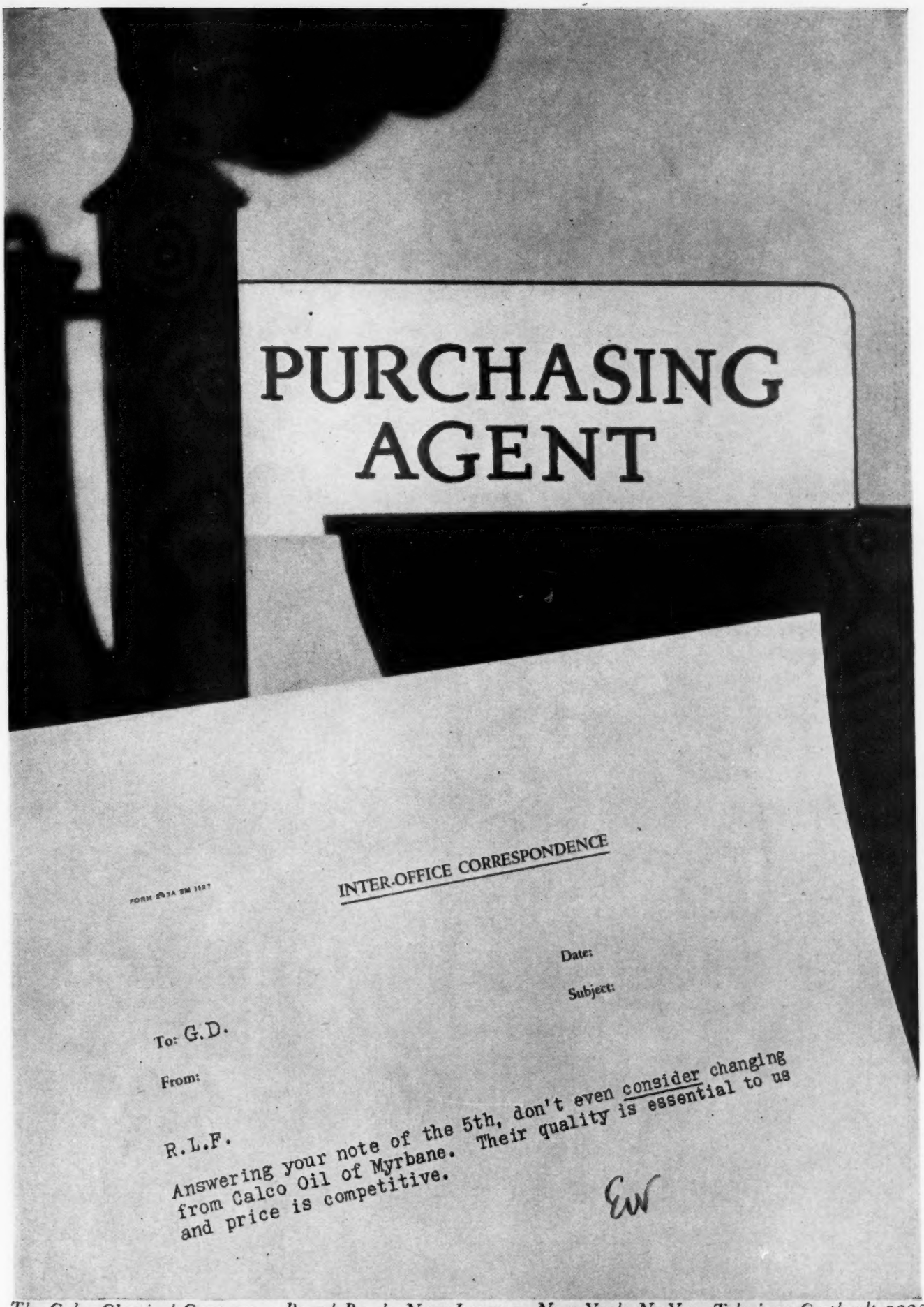
The manufacturer of any product containing wooden parts is overlooking a tremendous advertising feature if he does not brand these parts. No matter how attractive labels are, they will not last and many a repeat dollar has been lost because the product has not been properly marked.

In the chemical field the carboys should all be marked. The brand should not only advertise the firm, but also show at a glance just what the carboy contains, and also show the I. C. C. classification.

In making shipments to foreign countries, a brand is especially desirable, for the reason that salt water has a tendency to obliterate stenciling.

With its new methods, branding has come into its own and we can safely say it is still in its infancy. Probably, in time, it will replace all other forms of marking.

With its new methods, branding is beginning to come into its own and we can safely say it is still in its infancy. During every moment of its existence and over every mile of its travel, the container is on constant display. In the chemical field particularly, where containers are used again and again, branding should prove an especially adapted method for carrying the trade-mark or company name far and wide. Not only is direct advertising secured in this manner but the consumer is kept constantly aware of his source of supply through the cumulative effect produced by the marked containers. Branding can be advertising of the best, and practically at no cost.



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Chemical Facts and Figures

American Chemical Society Holds Its Seventy-sixth Meeting at Swampscott

Meeting in Session From Monday to Friday—Headquarters at New Ocean House—Nitrogen Symposium Features Industrial Chemical Section Meeting—Golf Tournament Feature of Round of Social Activities.

American Chemical Society holds seventy-sixth meeting at Swampscott, Mass., September 10 to 14. Registration opened at the New Ocean House, on the morning of September 10. A council meeting was held in the afternoon, and a reception and informal dance in the evening.

Two general meetings were held on Tuesday morning. One was under the joint auspices of the Divisions of Industrial and Engineering Chemistry and organic Chemistry and the Other under the auspices of the Division of Physical and Inorganic Chemistry. Speakers at the former were: W. H. Warren, on "Contemporary Reception of Woehler's Discovery of the Synthesis of Urea"; A. D. Little, on "Industrial Significance of Recent Developments in Organic Chemistry"; Jocelyn Thorpe, on "One Hundred Years of Organic Synthesis"; and Francis H. Carr, on "The Control of Reactions in Organic Synthesis". Speakers at the latter meeting were: Gregory P. Baxter on "Theodore William Richards"; Joel H. Hildebrand, on "Edgar Fahs Smith"; and Ernest A. Hause, on "Importance and Influence of Colloid-Chemical and Colloid-Physical Research." The afternoon was given over to divisional meetings and the evening to informal entertainment and dancing.

Divisional meetings were held both morning and afternoon of the following day. In the evening, the president, S. W. Parr, addressed a general meeting on "Chemistry and the American Chemical Society."

The last of the divisional meetings were held on Thursday morning, September 13. In the afternoon, the finals of the Golf Tournament were held, and in the evening, informal dancing was held at the hotel. Both Friday and Saturday were devoted to sight-seeing trips for those who cared to attend.

The Division of Agricultural and Food Chemistry, F. C. Blanck, chairman, and H. A. Schuette, secretary, held a symposium on "Chemistry and the Food Industries", meeting on Wednesday afternoon and Thursday morning. The Division of Petroleum Chemistry, J. Bennett Hill, Chairman, and Carl L. Johnson, secretary, held a joint symposium with Gas and Fuel Chemistry Division on "Combustion", Tuesday afternoon and Wednesday morning. Additional meetings of the petroleum group were held Wednesday afternoon and Thursday morning. The Division of Dye Chemistry, M. L. Crossley, chairman, and H. T. Herrick, secretary, held sessions Tuesday afternoon and all day Wednesday. The Paint and Varnish Division, W. T. Pearce, chairman, and E. W. Boughton, secretary, held its meetings at the Deer Cove Inn, on Tuesday afternoon and all day Wednesday. The Division of Fertilizer Chemistry, F. W. Magruder, chairman, and H. C. Moore, secretary, held an all-day session on Wednesday. The greater portion of the day was devoted to a symposium on "Concentrated Fertilizers and Fertilizer Materials."

As has been noted, the Division of Industrial and Engineering Chemistry R. J. McKay, chairman, and E. M. Billings, secretary, held a joint session with the Division of Organic Chemistry on Tuesday morning. A single session was held in the afternoon. The division gave all of Wednesday to an "Economic Symposium on Nitrogen", Williams Haynes, chairman. The last meeting of the division was held Thursday morning. The Division of Leather and Gelatin Chemistry, Arthur W. Thomas, chairman, and Aug. C. Orthmann, secretary, held four sessions, one Tuesday afternoon, two on Wednesday, and one on Thursday morning. On Friday morning the division visited the Atlantic Gelatine Co., Woburn, Mass. The Division of Medicinal Chemistry, A. W. Dox, chairman, and A. E. Osterberg, secretary, held meetings on Tuesday morning and Wednesday afternoon.

In addition to its joint session with the Division of Industrial and Engineering Chemistry, the Division of Organic Chemistry, William Lloyd Evans, chairman, and Frank C. Whittemore, secretary, held a meeting on Tuesday afternoon, two on Wednesday, and one on Thursday morning. The Division of Colloid Chemistry H. B. Weiser, chairman, and F. E. Bartell, secretary, held a joint meeting with the Rubber Division at Hotel Preston on Wednesday morning. Other sessions were held Wednesday afternoon and Thursday morning. The Division of History of Chemistry, Lyman C. Newell, chairman, and Tenney L. Davis, secretary, held its meeting on Tuesday afternoon.

Division of Chemical Education William McPherson, chairman and R. A. Baker, secretary, held various group meetings, luncheons and dinners on Monday and Tuesday. Lloyd Van Doren addressed the division on Wednesday morning, and H. G. Knight, on Wednesday afternoon. Division of Cellulose Chemistry, Louis E. Wise, chairman, and E. C. Sherrard, secretary, held meetings on Tuesday afternoon and Wednesday morning. Division of Biological Chemistry, Paul E. Howe, chairman, and M. X. Sullivan, secretary, held meetings on Tuesday and Wednesday afternoon.

Division of Physical and Inorganic Chemistry George L. Clark, chairman, and Ward V. Evans, secreatry, held joint symposium on Tuesday afternoon with Division of Chemical Education on "Teaching Physical Chemistry". Other meetings were held on Wednesday and Thursday morning. Division of Gas and Fuel Chemistry, A. C. Fieldner, chairman, and O. O. Malleis, secretary, held joint symposium on Tuesday afternoon and Wednesday morning, with Petroleum Division, on "Combustion". A business meeting was held on Wednesday afternoon. Division of Rubber Chemistry, H. L. Fisher, chairman, and H. E. Simmons, secretary, held meetings on Tuesday afternoon and all day Wednesday. Wednesday afternoon was given to a symposium on "Polymerization". Division of Water, Sewage, and Sanitation Chemistry, Stuart E. Coburn, chairman, and W. D. Collins, secretary, held meetings on Tuesday afternoon and all day Wednesday. The Division of Sugar Chemistry, F. Bates, chairman, and F. W. Zerban, secretary, met all day Wednesday.

To Probe Decolorizing Carbon Costs

The United States Tariff Commission August 13 orders an investigation of the foreign and domestic costs of producing decolorizing carbons.

An application for an investigation under section 315 of the tariff act of 1922 was filed by the Darco Sales Corporation, New York, with a view to securing an increase in the present duty. The present duty is 20 per cent. ad valorem, under paragraph 71 of the act.

According to available data at the commission, the total imports in 1927 amounted to more than 1,000,000 pounds. Holland was said to be the principal competing country, although some importations have come from Germany and other European countries.

Personal and Personnel

Edward A. Foster, sales manager, Samuel Cabot, Inc., Boston, dies August 26, at the Massachusetts Homeopathic Hospital, aged 45. He had represented the company in all parts of the country before being appointed to the position he held at his death. He was a member of the Boston Chamber of Commerce and made his home at East Arlington, Mass.

Stanley Thorbeck is appointed manager of Federal Products Co's. Philadelphia distributing branch. Mr. Thorbeck was formerly at the Cincinnati office and more recently at New York. Philadelphia office of the company has been moved to Terminal Warehouse Office Bldg., Beach and Brown sts.

Dr. J. M. Doran, Commissioner of Prohibition, in an address read before the International Congresses Against Alcoholism, at Antwerp, August 23, suggests that the other countries of the world co-operate with the United States to combat the international illicit traffic in liquor.

Chester C. Bassett, Jr., assistant sales manager, the Viscose Co., is president of the board of directors, and R. E. T. Haff, assistant director of sales, technical division, Du Pont Rayon Co., Inc., is vice-president of the board of directors of the Rayon Institute of America, Inc.

L. N. Best, C. A. Bigelow, C. A. Higgins, C. C. Hoopes and G. M. Norman have been elected additional directors of Hercules Powder Co., increasing the board to 12 members. An executive committee and a finance committee have also been appointed.

J. H. Weis, formerly connected with the Mansfield Vitreous Enamel Co., Mansfield, Ohio, has become associated with the United States Feldspar Corp. Cranberry Creek, N. Y., where he will be in charge of ceramic tests and investigations.

A. M. Erskine, formerly professor of chemistry, Hamilton College, Clinton, N. Y., accepts position with E. I. du Pont de Nemours & Co., Newark, as assistant technical director, dry color research department.

Dr. Harold Hunter, Battersea Polytechnic Institute, London, is appointed director of the new artificial silk department of the British Cotton Industry Research Association at the Shirley Research Institute.

Fred C. Adams, president of the company bearing his name, is appointed chairman, of the Paint, Oil, Varnish, Glass and Decorating Industries for the Chicago World's Fair Enrollment Campaign.

H. D. Carter, formerly chemist for the Ferro Enameling Co., Cleveland, has become connected with the Canton Enameling & Stamping Co., Canton, Ohio, in a similar capacity.

Marion C. Pfund leaves Calco Chemical Co., Bound Brook, N. J., to re-enter the teaching field as assistant professor, Department of Foods and Nutrition, Cornell University.

G. H. Sayler resigns from the chemical research department, Denison Manufacturing Co., Framingham, Mass., to accept a position with the Miner Laboratories, Chicago.

Edwin M. Allen, president, Mathieson Alkali Works and of the Commonwealth Chemical Corp., has been elected to the Chemists' Club, New York.

Charles A. Newhall, San Francisco, consulting chemist, resigns from the Clay Products Association.

Chemical Section, Nat'l Safety Council To Meet in New York, October 1 to 5

The Chemical Section of the National Safety Council plans an extensive program in connection with the seventeenth annual congress of that body in New York, October 1 to 5. The chemical sessions will begin October 1, with a luncheon in the Hotel Pennsylvania, October 1. Dr. H. C. Parmelee, editor, Chemical & Metallurgical Engineering will present "Some Recent Observations on Safety in Chemical Engineering." John S. Shaw manager, safety and service division, Hercules Powder Co., Wilmington, will lead a round table discussion of "Safety in the Chemical Industry."

October 2, Dr. Frank P. Underhill, of the Yale School of Pharmacology and Toxicology will discuss "The Treatment of Chemical Burns." There will be a general discussion of "Health Hazards in the Chemical Industry," lead by C. T. Graham-Rogers, assistant director, bureau of industrial hygiene, N. Y. State Department of Labor; G. H. Gehrmann, M. D., medical director of E. I. du Pont de Nemours & Co.; and Walter S. Paine, research engineer, Aetna Life Insurance Co.

Wednesday morning, A. L. Armstrong, safety engineer, Eastman Kodak Co., and Carl F. Coffelt, safety director of the Victor Chemical Works, will discuss "The Status of the Chemical Industry as Revealed by Accident Experience," and Dr. Yandell Henderson, physiologist, Yale School of Medicine, is to talk about "Gas Masks and Respirators." Three speakers will discuss "The Safe Handling of Compressed Gases," among them being J. I. Banash, a Chicago engineer.

Thursday morning J. H. Shapleigh, the Hercules Powder Co., Kenvil, N. J., will talk about "Gauging and Sampling." Other discussions will relate to "Safety in Chemical Apparatus" and various timely questions.

Non-members will be welcome at all sessions.

Penn. Salt Co. Before Commission

Federal Trade Commission holds a trial examiners' hearing in matter of Pennsylvania Salt Manufacturing Co. of Philadelphia, August 28, at Federal Building, Philadelphia. Inquiry was held under provisions of Clayton Anti-Trust act.

Section 7 of the Clayton Act prohibits any manufacturing interest from acquiring property of another manufacturer engaged in similar industry if the effect of such an acquisition is to restrain competition.

In May, 1924, Pennsylvania Salt Manufacturing Co. acquired substantially all the stock of Michigan Electrochemical Co. whose plant was situated at Menominee, Mich. This plant, the commission contended, was in competition with the Pennsylvania Salt Manufacturing Co.'s plant at Wyandotte, Mich., and acquisition of control, it claims, has had the effect of removing competition in that territory

The commission presented testimony at the initial hearing at Menominee. At hearing here testimony was presented by Pennsylvania Salt Manufacturing Co.

Chilean Nitrate Producers' Association, at meeting in Valparaiso, August 14, are reported to have reached an agreement for the immediate centralization of all sales activities for a two-year period. The American producer, according to reports is not involved in the agreement and there is some speculation as to whether or not the Chilean group will establish a sales office in this country to compete with the American company in its home market.

Monsanto Chemical Works, St. Louis, announces completion of an addition to its phthalic anhydride department, giving it double its former capacity. A further increase is under way and it is estimated that by the end of the year, capacity will be approximately three times that of a year ago.

Institute of Chemistry Concludes Second Annual Session at Evanston

Institute of Chemistry, American Chemical Society, closes its second annual session held at Northwestern University, Evanston, Ill., from July 23 to August 18. The lectures and conferences through July 31, reported in these pages last month, dealt chiefly with chemistry as related to the agricultural problem. Beginning with August 1 the subjects for discussion took on a wider scope. Catalysis, hydrogenation, organic chemistry, anti-oxidants and the utilization of energy of high intensity in producing chemical reactions, were the subjects discussed during the first week of the month.

Health, the use of physics and chemistry in studying life processes, chemical hazards, petroleum, resins, lacquers and paints were taken up during the following week, that of August 6. Sanitation, the packing industry, leather, chemical literature, ceramics, alloys, and chemistry in national defense were discussed during the concluding week of August 13.

Speakers for the first week included: R. E. Burk, A. S. Richardson, C. J. Brockman, V. R. Kokatnur, Lloyd Van Doren, R. T. K. Cornwell, Thomas Midgley, Jr., C. C. Hubbard, H. N. Alyea, W. L. Semon, H. A. Curtis, W. R. Ham, David Klein, F. W. Upson, L. B. Sebrell, Sir James Irvine, and Lloyd Van Doren.

Speakers for week of August 6 included: B. T. Brooks, Gustave Egloff, W. F. Faragher, R. H. Kienle, L. V. Redman, M. J. Callahan, D. B. Keyes, Wm. Blum, C. E. K. Mees, M. X. Sullivan, C. B. Wood, Ellice McDonald, J. A. Nieuwland, W. J. Kelly, Robert Calvert, J. G. Davidson, W. P. Yant, Mrs. Elizabeth M. Koch, H. Gideon Wells, Paul Nicholas Leech, W. T. Bovie, Dr. Oliver Kamm.

Speakers for week of August 13 included: A. M. Buswell, W. D. Hatfield, H. E. Jordan, C. Robert Moulton, E. N. Wentworth, W. D. Richardson, John Arthur Wilson, R. H. Bogue, J. C. Hostetter, F. H. Riddle, F. B. Wade, C. W. Balke, F. B. Foley, H. Edmund Bullis, B. C. Goss, H. L. Gilchrist, J. E. Mills, Paul B. Malone, W. Lee Lewis, Gerald Wendt, F. C. Whitmore, V. K. LaMer, W. T. Read, and H. A. Geauque.

Texas Gulf Sulphur Co. is named as co-defendant in suit of Fred C. Pabst, et al, against Roxana Petroleum Corp., in District Court at Galveston, Texas. Petition sets forth that on September 21, 1925, the Roxana Petroleum obtained from Pabst an oil and mineral lease on a 25-acre tract on Clemens Dome for $1,200, agreeing to pay Pabst a royalty on sulfur mined. The petition declares that Roxana turned the property over to Texas Gulf Sulfur retaining all the oil and gas rights and some of the sulfur rights. The petition further claims that Roxana made fraudulent representations to Pabst to secure the lease and defendants entered into conspiracy to defraud Pabst. The contention of plaintiffs is that having discovered sulfur in paying quantities under their land, defendants are under legal obligation to develop it with diligent care.

Reorganization of the business of the Fred L. Lavanburg Co., New York, following its purchase by Arthur S. Somers, is completed at meeting of the board of directors, August 15.

Arthur S. Somers continues as president of the company. Andrew L. Somers was elected vice-president, Fred L. Somers, treasurer, and George Taylor secretary. Andrew L. Somers and Fred L. Somers were elected members of the board, succeeding Edmond E. Wise and Roger W. Straus, resigned.

Jacob Bloch, Chicago representative was appointed Western sales manager, retaining his headquarters in Chicago. Seldon Hait, attached to the company's office in New York was named Eastern sales manager.

Kentucky Alcohol Corp., New York, resumes operation of its Westwego, La., plant after having been closed down for period of seven months. Product of plant is used principally in preparation of automobile anti-freeze mixtures.

News of the Companies

Pennsylvania Salt Manufacturing Co. presents what is said to be one of oldest turbine engines in America, to Henry Ford for his museum of old machinery. The turbine was in the Wyandotte, Mich., plant of the company and after examining it, Mr. Ford made the request that the company allow him to acquire it for his collection.

Eastern Silica & Chemical Corp., Winchester, Va., John F. Penrose, president, recently organized, has acquired a tract of glass sand properties in the western section of Winchester County, and plans early development. It is proposed to build a complete production and handling plant, with mill and other facilities, to cost in excess of $50,000.

Selden Co., Pittsburgh, are making further extensions to their plant which will give them, it is said, a production of phthalic anhydride in excess of the total amount produced by all manufacturers in 1927. This increase has been necessary due to the heavy demand for phthalic anhydride in lacquer and synthetic resin fields.

Amtorg Trading Corp., acting in behalf of Aniltrset (Aniline Trust, Russia) retains Prof. Harry T. Gibbs, Washington, D. C. for technical assistance in the organization of the production in the Soviet Union of a series of chemical products used in the aniline industry. Equipment will be purchased in the United States.

U. S. Industrial Alcohol Co., New York, announces that effective September 1, Boston, Cincinnati, Lawrenceburg, Louisville and Peoria, will be discontinued as base points for alcohol sales by this company. Baltimore, New Orleans, New York, Philadelphia and Wilmington will be retained as such.

Monsanto Chemical Works, St. Louis, announces the manufacture of a new series of plasticizers to be offered under the trade name of "Santicizers." They are three in number and their chemical compositions are "Santicizer 1"—paratoluenesulfonanilid; "Santicizer 3"—ethylparatoluenesulfonamid; and "Santicizer 8"—ethylmetatoluenesulfonamid.

New sulfuric acid unit of Standard Wholesale Phosphate & Acid Works, now being erected at Curtis Bay, will be of direct contact type, using vanadium mass. Original plans are said to have called for platinum mass.

Consolidated Products Co., Inc., New York, purchases plant and equipment of Wayne Wood Products Co., Collinswood, Tenn. Plant and equipment will be sold by Consolidated Products in part or as a whole.

National Gypsum Co. purchases plant and lime deposits of Luckey Lime & Supply Co., near Woodville, Ohio. Deposits are estimated at 7,000,000 tons, or sufficient to last 100 years.

Plant and property of Albemarle Soapstone Corp., Esmont, Va., is acquired by new interests at public sale. It is understood that reorganization will be effected and operations resumed.

General Benzol Corp., New York, purchases property of Warren Refining Co., at Venturetown, Pa., and plans erection of refinery at cost of over $100,000.

Philadelphia warehouse of Certain-Teed Products Corp. is damaged by fire on August 29, with estimated loss of $8,000.

Dissoway Chemical Co., Brooklyn, N. Y., changes name to Eckford Chemical Co., Inc.

American Chemical Exports for 1st 6 months are 11 Per Cent. Over 1927

America's exports of manufactured chemical products for the six months ended June 30 exceeded the exports for the same period of last year by 11 per cent., according to statistics compiled by the Department of Commerce. It is explained that if the commodities included in the United States chemical trade for the half year be arranged into manufactured and raw or semi-manufactured materials three-fifths of the total exports, or $57,000,000 worth, was accounted for by manufactured goods.

The composition of imports showed a sharp contrast to that of exports—three-quarters of the total, or $90,000,000 worth, comprised of crude or semi-prepared materials, and only one-quarter, or $25,000,000, made up of manufactured goods. Imports of manufactured goods showed a loss of $4,000,000 from the value of the first half of the preceding year, while receipts of crude and semi-manufactured goods not indigenous to the United States advanced $15,000,000.

A diminished trade in rosin and turpentine was the chief cause of the somewhat reduced export trade in chemicals and allied products and this was partially explainable by lower export valuations. There was a big drop in the export price of wood rosin along with a much improved trade. The quantities of wood rosin shipped advanced from 65,000 barrels during the first half of 1927 to 66,000 during the first half of 1928, while values fell from $1,100,000 to $870,000.

Nearly double the amounts of wood turpentine were also shipped the current half year, or 574,000 gallons, valued at $300,000. Gum rosin declined to 477,000 barrels, valued at $7,300,000, and spirits of turpentine to 4,500,000 gallons, valued at $2,500,000.

Imports of gums and resins were also a little less than last year, having dropped from $17,200,000 in the January-June, 1927, period to $16,200,000 in the corresponding 1928 months. The loss of nearly 9,000,000 pounds in receipts of varnish gums was spread throughout the classes making up this group with the exception of kauri gum, although the more important reduction occurred in shellac, which fell from 12,800,000 pounds to 10,700,000.

In the camphor trade, only half as much synthetic camphor came in during the six months of 1928, or 770,000 pounds, worth $300,000, while receipts of natural crude camphor expanded to 2,300,000 pounds, $875,000. Refined camphor changed relatively little with 623,000 pounds, $300,000.

Imports of gum arabic made a decided gain to 6,400,000 pounds, valued at $500,000, and of gum tragacanth to 1,300,000 pounds, $650,000.

The crude drug and botanical trade made a better showing in both directions—incoming shipments of $5,400,000, as usual, more than three times outgoing shipments of $1,600,000. For use by the continually expanding insecticide industry imports of pyrethrum flowers were nearly half as much again as the quantity received, while the value approached three times that of last year, or a total importation of $1,950,000 (7,900,000 pounds) for the first half of 1928.

Columbia Chemical Division, Pittsburgh Plate Glass Co., Barberton, Ohio, publishes a handsomely bound booklet entitled "Columbia Alkali", containing, in addition to a history of the division, certain general and specific information prepared for the benefit of users of alkali to enable them to better understand the nature and characteristics of the different soda compounds. The booklet is being distributed by The Isaac Winkler & Bro. Co., Inc., Cincinnati, exclusive sales agents for the "Columbia Brand" soda ash and caustic soda.

Nitrate Agencies Co., Wilmington, N. C., manufacturer of chemical specialties, insecticides and fertilizer products, plans rebuilding of plant recently destroyed by fire. Plant will be equipped for a rated capacity of about 15,000 tons per month and is reported to cost about $100,000 with machinery

S. C. I. Holds Meeting at New York

Society of Chemical Industry holds its annual meeting in New York, September 3 to 8, as guests of the American Section of the society, whose chairman is L. V. Redman. Hotel headquarters were at The Commodore and scientific headquarters at the Chemists' Club.

The session opened Monday morning, September 3, with the official greeting by the chairman of the American Section. This meeting and the registration which preceded it, took place at the Chemists' Club. During the afternoon the members and their guests made a sightseeing tour around New York, which was followed, in the evening, by a reception and dance at the Hotel Commodore.

On Tuesday morning, a council meeting was held, followed by the annual general meeting, which was addressed by the president, Francis H. Carr, C. B. E. In the afternoon, the first technical session was held. At that time A. E. Marshall spoke on "Application of Glass to the Chemical and Allied Industries; and Graham Edgar, on "Anti-Knock Motor Fuels." At night, the Messel Medal was presented to Robert A. Millikan, who spoke on "Available Energy", following the presentation.

On Wednesday, the entire party made an all-day industrial trip by water.

Two technical sessions were held on the following day. In the morning, John E. Temple spoke on "Potash from Searles Lake"; B. T. Brooks on "Present Status of Refining and Cracking of Petroleum"; and M. J. Callahan on "Development of Duco Type Lacquer." At the afternoon session, F. E. Denny spoke on "Chemical Treatment for Shortening the Rest Period of Plants"; and Charles Hamilton Foott on "Pre-oxidation as a Preliminary Treatment to the Low Temperature Distillation of Coal". A buffet lucheon was tendered by The Chemists' Club at noon, and the annual banquet of the society was held at the Hotel Commodore in the evening.

The meeting closed on Friday with an all-day excursion up the Hudson to West Point.

Salesmen's Ass'n Golf Tournament

Salesmen's Association of the American Chemical Industry plans a golf tournament for Tuesday, Sept. 18. The location of the tournament has not yet been decided. Robert J. Quinn, chairman of the arrangement committee, has extended an invitation to all members of the chemical industry to participate, as the tournament will not be limited to Association members.

The annual meeting for the election of officers will take place October 16 at a location to be announced prior to that date. F. P. Sommers, Noil Chemical & Color Works and Williams Haynes, publisher, CHEMICAL MARKETS were appointed additional members of the committee of nominations for the forthcoming election.

Selden Co., Pittsburgh, begins suit against National Aniline and Chemical Co. in the Federal District Court of Buffalo for infringement of United States Patent No. 1285117, which is the basic patent under which all the processes for the air oxidation of phthalic anhydride are carried out. In the suit is also included Reissue Patent 15520 which covers the use of boiling liquids in controlling chemical reactions.

Patents sued on were granted under the act of Congress recently rewritten under which government employees are permitted to take out patents in their own name in return for a license to the government to use the invention.

Davison Chemical Co., Baltimore, begins construction of addition to its contact sulfuric acid plant, which has capacity of 100 tons per day. Addition will enable company to double output of this plant, which is expected to be in operation by December.

More Than 100 Scientists To Attend Second Bituminous Coal Conference

Twelve major topics for discussion at the Second International Conference on Bituminous Coal to be held under the auspices of the Carnegie Institute of Technology, Pittsburgh, Pa., November 19-24, 1928, are tentatively announced by Dr. Thomas S. Baker, president of the institution, and chairman of the Congress. About one hundred engineers and scientists representing fifteen nations have already tentatively accepted invitations to speak or to send papers to the Congress, and the number of speakers and delegates is growing daily. About sixty per cent. of the papers will be delivered by representatives of countries other than the United States.

Although the Second International Conference will be similar in purpose to the first Congress held in 1926, preliminary plans for this year's meeting show that its scope will be considerably enlarged and the program will be more important and more international in character. The discussion of Fixed Nitrogen is one of the topics which will receive close attention. The liquefaction of coal, which was one of the principal subjects of discussion at the first meeting, will again occupy a prominent place in the deliberations. Low temperature distillation will be treated by representatives of at least a half dozen countries. High temperature distillation, power from coal, coal tars and oils, complete gasification of coal, origin of coal, coal washing, pulverized coal, catalysts, and the general aspects of the bituminous coal industry are other topics that will be considered.

Dard Hunter, Inc., Salisbury, Conn., recently organized by officials of Dard Hunter's Paper Mill, Chillicothe, Ohio, with capital of $50,000, has taken over the former plant of Barnum & Richardson Co., Lime Rock, near Salisbury, heretofore devoted to manufacture of mechanical equipment, and will remodel and improve for a new mill for the manufacture of high grade paper stocks. Initial project is reported to cost about $75,000. Dard Hunter, Chillicothe, heads the new organization.

Bakelite Corp., New York, through its attorneys, Fish, Richardson & Neave, has filed a Bill of Complaint in the Federal Court for the Southern District of New York charging General Plastics, Inc., with infringement of patents covering improvements in the technique of manufacture of phenolic condensation products. General Plastics manufacture materials sold under the trade name "Durez". Three United States patents are alleged to be infringed—1038475; 1020593; 1098608.

Fire destroys a substantial portion of Crescent Plant, American Solvents & Chemical Corp., New Orleans. Preliminary news reports of the fire were somewhat exaggerated, though the company is not prepared to state the exact loss at the time of going to press. The entire loss is covered by insurance. No inconvenience is caused customers as shipments are being taken care of from other points.

Union Sulphur Co. signs contract for delivery of natural gas for use at its sulfur plant now being erected at Boling Dome, Texas. Gas will be supplied by Houston Gulf Gas Co., Houston, Texas. Officials of the Union Sulphur Co. say that they have forty years' supply at Boling, where tests show the sulfur strata to average about 100 feet in thickness.

Dr. James M. Doran, Federal Commissioner of Prohibition; Harry A. Anslinger, consul of the Department of State; and Captain James P. McGovern, general consul, Industrial Alcohol Institute; represent the United States at the nineteenth assembly of the International Congress Against Alcoholism, at Antwerp, Belgium, August 20-25.

Champion Chemical Co., Springfield, Ohio, plans a one-story addition, reported to cost about $14,000.

Receivers for Cook, Swan & Young

Temporary receivers are appointed for Cook, Swan & Young Corp., New York. Action for a receivership was brought by minority stockholders who allege mismanagement and inefficiency . The solvency of the corporation is said to be in no way involved.

A hearing on a petition to make the receivership permanent was held August 17 before Vice-Chancellor Fallon, at Hoboken, N. J.; decision was reserved. Pending a decision, Walter C. Russ, New York and Frank C. Ferguson, Trust Company of New Jersey, Jersey City, are acting as custodians of the corporation's affairs under the jurisdiction of the court.

Cook, Swan & Young Corp. is represented in the action by the law firm of William E. Foster & Co., New York, and the minority stockholders, one of whom is Percy L. Young, former treasurer and director of the corporation, are represented by McDermott, Enright & Carpenter, Jersey City, N. J. The minority stockholders are said to represent about one-third of the entire capital stock of the company.

Authorized capital of the Corporation is 5,000 7 per cent. preferred shares of $100 par value, of which 4,940 shares are outstanding, and 10,000 shares of no par value common stock, of which 5,835 shares are outstanding.

Sodium Silicoflouride Duty is Up

The import duty on sodium silicofluoride has been increased by President Coolidge to 25 per cent. ad valorem based upon the American selling price from its previous figure of 25 per cent. of the foreign market value.

The records of the Tariff Commission show that the action of the President was recommended by the commission. The increases in duties were asked by the Oconee Alkali Co., Athens, Ga., and the Southern Alkali & Chemical Co., Savannah, Ga. Upon the application of these two concerns, the commission instituted a cost-of-production investigation in this country and abroad on July 24, 1925.

It was found that an increase of 50 per cent. on the existing tariff would not equalize the cost of production in this country and in Denmark, America's chief competitor. The domestic consumption of sodium silicofluoride amounts to about 5,000,000 pounds a year. Imports have ranged from about 2,000,000 to over 3,000,000 pounds annually during the past four years.

Production of industrial alcohol from sisal waste at a cost of from 7 to 12 cents a gallon is said to have been accomplished by a process devised in French Sudan which gives excellent results, it was stated by the Chemical Division, Department of Commerce, on the basis of reports from the Vice Consul at Paris, D. H. Slawson.

By the new method, known as the Fouque Process, not only is industrial alcohol obtained but a solid combustible and fertilizer is produced.

A project is said to be now under way by which distilleries for application of the Fouque Process are to be established in Mexico, where the abundant raw material available would give approximately 37,500,000 gallons of industrial alcohol annually.

William A. Storts, vice-president, Edward Flash Co., New York, and chairman, Cottonseed Oil Committee, New York Produce Exchange, dies August 27, aged 55. He was born in Louisville, Ky., and came to New York in 1907 as representative of the Kentucky Refining Co. In 1909 he joined the Edward Flash Co., New York cottonseed oil broker, as vice-president. Trading in cottonseed oil was suspended in the New York Produce Exchange on the day of his death and memorial services are planned there in the near future.

The Financial Markets

Aldyco Corporation is Formed By Allied Chemical and Dye Corp.

New Organization Will Handle Securities of Parent Corporation Outside of Chemical Field—Capitalized at $3,000,000—Allied to Transfer Stocks and Bonds of Its Outside Holdings.

Allied Chemical and Dye Corporation, arranges to segregate in a subsidiary certain of its extensive security holdings outside the chemical field. The new holding company, known as the Aldyco Corporation, has been organized with an authorized capital of $3,000,000.

It is the parent company's intention, to transfer to the new subsidiary stocks and bonds of other companies which it now owns or which it may acquire. According to the latest balance sheet, as of Dec. 31, 1927, the company had United States Government and other marketable securities valued at $86, 337,748, which rank it as one of the largest holders of securities in the country. The company is constantly adding to its security holdings.

Its holdings include stocks and bonds of industrial, railroad and public utility companies. It is one of the largest stockholders in the United States Steel Corporation. The company was incorporated on Dec. 17, 1920, under the laws of the State of New York. Its duration is perpetual. It was organized to consolidate the various companies which are now operated as subsidiaries.

Allied Chemical and Dye's capital consists of $39,284,900 of $100 par 7 per cent. cumulative preferred stock and 2,178,109, shares of no-par common stock. There is no funded debt. According to the latest balance sheet the company had total current assets of $145,721,908 and total current liabilities of $12,642,066. Total assets at the end of last year amounted to $349,554,577.

It has been reported in Wall Street for some time that the company was planning to split its common stock, probably on a four-for-one basis, and retire its preferred stock. The preferred is redeemable at the option of the company at $120 a share and accrued dividends upon thirty days' notice.

Davison Year Income at $2,930,062

Report of Davison Chemical Co. and subsidiaries for fiscal year ended June 30, 1928, shows, after provision for charges, depreciation, etc., net income of $2,930,062 including $1,914,069 paid to Davison company or to be paid to that company by purchasers of 80,000 shares of Silica Gel Corp. stock. This is equivalent to $7.32 a share on 400,000 no-par shares of stock. Excluding profit derived from sale of Silica Gel stock, net income was $1,015,993 or $2.53 a share on the stock.

This net income accrued from operations during last six months of fiscal year, according to the report of C. Wilbur Miller, president, results for the first six months having showed a loss. The report for the fiscal year, the first issued by company since it changed its accounting period from the calendar to the fiscal year is the most favorable since 1920.

Current assets at the end of June were $5,893,091, including $2,439,948 cash, while current liabilities totaled $1,270,444.

Consolidated income account for year ended June 30, 1928, follows: Gross manufacturing and trading profits $2,309,318; other income $1,914,069; gross income $4,223,387; administrative and selling expenses $706,817; operating income $3,516,570; income charges $259,419; depreciation $327,089; net income $2,930,062.

Consolidated balance sheet of Davison Chemical Co. and operating subsidiaries (after giving effect to the sale of 80,000 shares of common capital stock of The Silica Gel Corp. in accordance with underwriting agerement of June 20, 1928,) as of June 30, 1928, follows:

Assets: Land, buildings, machinery, equipment, etc., $12, 266,590; cash $2,439,949; notes receivable $775,304; accounts receivable $1,414,431; inventories $1,249,461; materials in transit $13,949; sinking fund for retirement of bonds $31,585; voting trust certificates The Silica Gel Corp. $2,511,600; investment The Davison Sulphur Co. $5,085,659; other investments $25,776; prepaid items $75,519; expenditures for Phosphate Rock property in Florida $561,834; total $29,451,657.

Liabilities: Capital stock (represented by 400,000 no par shares) $14,607,107; notes, acceptances, etc., payable $819,842; accounts payable, accrued interest, etc., $450,604; mortgages on plants of subsidiaries $426,981; depreciation reserve $2,992,290; other reserves $22,745; minority interest in operating subsidiaries $672,392; capital surplus $4,050,967; profit and loss surplus $5,408,729, total $29,451,657.

Above statement gives effect to the sale of Curtis Bay Railroad Company. This transaction is subject to approval of Interstate Commerce Commission, which had not rendered a decision as of June 30, 1928.

American Cyanamid Profits Up

Report of American Cyanamid Co. and subsidiaries for year ended June 30, 1928, shows net profit of $1,547,590 after depreciation, depletion, interest, federal taxes, etc., equivalent after 6% preferred dividends, to $3.67 a share (par $20) earned on 329,510 shares of combined Class A and Class B common stocks. This compares with $1,285,323 or $2.91 a share on the combined Class A and Class B stocks in previous year.

Consolidated income account for year ended June 30, 1928, compares as follows:

	1928	1927
Prof after depr. & depl.	$2,429,402	$1,882,626
Other income	282,451	290,774
Total income	$2,711,853	$2,173,400
Research & process exp.	393,130	329,747
Miscell	6,504	17,551
Mark dev. exp.	240,107	270,302
Inter & disc	294,905	117,557
Federal taxes	229,617	152,920
Net profit	$1,547,590	$1,285,323
Pfd. divs	335,754	323,625
Com divs	527,544	428,629
Surplus	$684,292	$533,069

The consolidated balance sheet as of June 30, 1928, shows current assets of $9,869,059, of which cash was $1,784,454 and marketable securities were $2,320,555. Current liabilities were $2,467,032. Total assets were given as $34,089,600. The surplus account was $2,326,874, against $1,836,482 a year previously.

Mathieson Alkali Works declares regular quarterly dividend of $1.50 on the common stock and $1.75 on the preferred stock, payable October 1 to stock of record September 17.

American Agricultural Profits for Fiscal Year at $2,237,650

Report of American Agricultural Chemical Co. and subsidiaries for year ended June 30, 1928 shows net profit of $2,237,650 after expenses, interest, depreciation and depletion, equivalent to $7.86 a share earned on outstanding 284,552 shares of 6% preferred stock on which no dividends have been paid since April 1921. Allowing for only regular annual dividend requirements on the 6% preferred stock, balance is equal to $1.59 a share on outstanding 333,321 shares of common stock. This compares with net loss of $1,924,134 in year ended June 30, 1927.

Net profit for year ended June 30, 1928 does not include profit of $1,029,963 realized from sale of Charlotte Harbor & Northern Railway Co., which has been credited to the reserve for contingencies and federal taxes.

Consolidated income account for year ended June 30, 1928, compares as follows:

	1928	*1927*	*1926*	*1925*
*Cons. inc.	$5,301,905	$2,106,605	$5,303,444	$6,811,478
†Reserves	660,150	1,394,438	1,146,019	1,314,681
Depr. & depl.	1,121,962	1,064,129	1,082,311	1,110,447
Interest	1,282,143	1,572,172	2,051,402	2,340,536
Net profit	§$2,237,650	‡$1,924,134	$1,023,712	$2,045,814
P. & L. deficit	16,733,009	18,760,659	16,836,524	17,860,237

*After operating expenses. †Freights, discounts and doubtful receivables ‡Loss.

§Does not include profit of $1,029,963 from sale of Charlotte Harbor & Northern Railway Co., which has been added to the reserve for contingencies and federal taxes.

Robert S. Bradley, chairman of the board, in his remarks to shareholders pointed out that conditions in the fertilizer industry during the year were more satisfactory than the previous year, both as regards demand and prices. He also said that competition was severe in many sections, particularly the cotton states, and, although the total volume of trade of all states is estimated to have increased nearly 20%, the tonnage sales of the company were somewhat less than those of 1927, owing to the decision of the management, for the time being, not to meet the irresponsible and price-cutting competition which developed during the past spring season.

New Jersey Zinc Co. for quarter ended June 30, 1928, reports net profit of $1,812,431 after taxes, depreciation, depletion, etc., equivalent to $3.69 a share earned on 490,816 shares of stock. This compares with $1,649,027 or $3.36 a share in preceding quarter and $1,975,514 or $4.02 a share in second quarter of 1927.

Net profit for first half of 1928, totaled $3,461,459 after above charges, equal to $7.05 a share against $3,744,994 or $7.63 a share in first half of previous year.

National Distillers Corp. reports for six months ended June 30, 1928, profit of $158,134, after interest, etc., but before depreciation and amortization of brands and trademarks, etc., comparing with profit of $26,668 in first half of 1927. Profit for quarter ended June 30 was $201,166 after interest comparing with loss of $43,032 in preceding quarter and profit of $31,462 in second quarter of preceding year.

American Cyanamid Co. declares regular quarterly dividend of $1.50 upon the preferred, 1½ per cent. on the common, and an extra dividend of ½ per cent. on common, to be paid October 1 to stockholders of record September 15. This amounts to 40 cents per share upon the "A" common and "B" common stocks, par value $20 per share.

American Commercial Alcohol Corp. reports for three months ended July 31, 1928, surplus available for common dividends of $204,796 after depreciation, interest, amortization, federal taxes and preferred dividends, equivalent to $2.66 a share earned on 77,000 shares of no-par common stock.

Acetol Products, Inc., declares regular quarterly dividend of 60 cents on Class A, payable September 15 to stock of record September 1.

American Potash Initial 50c Dividend

American Potash & Chemical Corp. declares an initial dividend of 50 cents on capital stock, payable September 29 to stock of record September 21. Of this payment, 25 cents is for the quarter ended June 30 and 25 cents for the quarter ending September 30.

Although the price of borax has fallen during the past five years to $50 a ton, from $105, owing to increasing output in this country, American Potash has been able to show substantially increasing profits through improvement in its processes. During the first six months this year net income after all charges, including taxes and depreciation, was $759,202, against net of $854,583 for the full year 1927, and a loss of $12,145 in 1926.

This year holders of the $1,200,000 ten-year 7% convertible notes exercised their right to convert. Corporation's bank loans of $650,000 have also been paid, leaving nothing ahead of the capital stock of which 395,000 shares were outstanding prior to the note conversion.

SOUND CORPORATE FINANCING

MONSANTO CHEMICAL WORKS is the largest manufacturer in the United States of fine and medicinal chemicals and is also an important producer of heavy chemicals. It has consistently expanded the scope of its business through the introduction of new products as well as by the development of additional markets for its established lines.

THE development of a diversified chemical industry in the United States has been generally regarded as a very worthwhile addition to our economic life. Monsanto has been one of the important factors in this development and it has, in addition, won a place in the international market through a 50% ownership in a long established English company. Monsanto's Common Stock was listed on the New York Curb and the Chicago Stock Exchange when we made a public offering of a substantial block of this stock. At the same time, we underwrote and distributed an issue of First Mortgage 5½% Bonds for the Company to refund an outstanding issue of 7% bonds.

A. G. Becker & Co.

54 Pine Street, New York

CHICAGO ST. LOUIS SEATTLE MILWAUKEE PORTLAND MINNEAPOLIS SPOKANE SAN FRANCISCO

This advertisement, reprinted from the New York Times of August 28, is thought to be the first advertising of a purely chemical organization by a financial house, aside from such advertising as has been done in connection with new financing.

Grasselli Chemical Co. declares regular quarterly dividend of 67 cents on common and $1.50 on the preferred, both payable September 29 to stock of record September 15.

Virginia-Carolina Profits $2,510,702

Report of Virginia-Carolina Chemical Corp. and subsidiaries for year ended June 30, 1928, shows net profit of $2,510,702 after expenses, depreciation, depletion and provision for doubtful accounts, equivalent after deducting 7% prior preference dividends and allowing for dividend requirements on the 6% cumulative participating preferred stock, to 68 cents a share earned on outstanding 486,700 no-par shares of common stock. This compares with net loss of $219,853 in preceding year.

Consolidated income account for year ended June 30, 1928, compares as follows:

	1928	1927
*Gross	$4,848,143	$2,005,157
†General expenses, etc	2,127,041	2,128,273
Operating profit	$2,721,102	‡$123,116
Other income	552,150	539,169
Total income	$3,273,252	$416,053
Depreciation	762,550	635,906
Net profit	$2,510,702	‡$219,853
Prior preference divs.	896,199	934,826
Surplus	$1,614,503	§$1,154,679

*After manufacturing expenses and depletion of mines. †Includes provision for doubtful accounts, etc. §Loss. ‡Deficit.

Hercules Powder Co. declares the regular quarterly dividend of 2% on common stock, payable September 25 to stock of record September 15.

Davison Chemical Co. stockholders vote to increase the authorized capital stock to 1,000,000 no par shares, from 400,000.

Columbian Carbon Co. Earns $1.72

Columbian Carbon Co. and subsidiaries report for quarter ended June 30, 1928, net income of $691,733 after federal taxes, depreciation and depletion, equivalent to $1.72 a share earned on 402,131 shares of no-par stock. This compares with $670,835 or $1.66 a share in preceding quarter and $507,865 or $1.26 a share in second quarter of 1927.

For six months ended June 30, net income totaled $1,362,568 after above charges, equal to $3.38 a share, against $1,045,983, or $2.60 a share in first half of preceding year.

Vanadium Corp. of America reports for six months ended June 30, 1928, net income of $969,492 after depreciation, depletion, federal taxes, etc., equivalent to $2.57 a share earned on 376,637 shares of no-par stock. This compares with $1,110,602 or $2.94 a share in first half of 1927.

Consolidated income account for six months ended June 30, 1928, compares as follows:

	1928	1927	1926	1925
Prof. af. exp.	$1,128,861	$1,333,300	$1,372,583	$887,144
Other inc.	106,493	83,862	69,209	63,051
Total inc.	$1,235,354	$1,417,162	$1,441,792	$950,195
Depr., depl., tax, etc.	265,862	306,560	398,638	217,179
Net inc.	$969,492	$1,110,602	$1,043,154	$733,016
Dividends	564,955	564,955	471,421	.....
Surplus	$404,537	$545,647	$571,733	$733,016

Industrial Rayon Corp. detailed statement for six months ended June 30, 1928, shows net profit of $680,333 after depreciation, interest and federal taxes, equivalent to $3.57 a share earned on 190,431 shares of no par stock to be issued when exchange of all old Class A and Class B stocks has been completed. This compares with net profit of $269,270 or $1.41 a share in first six months of 1927, calculated on the above share basis.

The Industry's Bonds

1928 Aug. 31 High	1928 Aug. 31 Low	1928 High	1928 Low	1927 High	1927 Low	Sales In Aug.	Sales Since Jan. 1928	ISSUE	Date Due	Int. %	Int. Period	Orig. (1) Offering $
								NEW YORK STOCK EXCHANGE				
105⅛	105⅛	106⅛	104	105	99	158	1,859	Am. Agri Chem	1941	7½	F. A.	30,000
102	101¼	102⅛	100	103¼	100¼	466	2,323	Am. Smelt & Refin "A" 5%	1947	5	A. O.	...
107⅛	107⅛	109⅛	106⅛	108⅛	107⅛	130	736	Am. Smelt & Refin "B" 6%	1947	6	A. O.	...
105⅛	104⅛	106	103	105⅞	103⅜	996		Anaconda Copper Mng	1953	6	F. A.	100,000
135⅛	134⅛	137	110⅛	116⅛	106¼	2,551		Anaconda Copper Mng 7%	1938	7	F. A.	50,000
101⅛	101⅛	105⅛	96⅛	97	87	161	3,442	Anglo Chilean	1945	7	M. N.	16,500
100⅛	100⅛	103⅛	97⅛	103⅛	100⅛	131	692	Atlantic Refin	1937	5	J. J.	15,000
...	...	103⅛	100	102⅛	100⅛	39	234	By product Coke	1945	5½	M. N.	8,000
...	...	102⅛	100	104⅛	101⅛	20	119	Corn Product Refin	1934	5	M. N.	10,000
108⅛	108⅛	117	106	111⅛	106	49	1,319	General Asphalt	1939	6	A. O.	5,000
...	...	100	99	91⅛	81⅛	55	152	Int. Agric. Corp	1932	5	M. N.	30,000
80	79⅛	86	77	...	...	36	267	Int. Agri. Corp. stamped, extended	1942	5	M. N.	7,020
125	125	133	113	133⅛	104	114	2,765	Liq. Carbonic Corp	1941	6	F. A.	5,000
111⅛	111⅛	120	100⅛	102	98⅛	166	3,831	Montecatini	1937	7		
95⅛	95⅛	101⅛	94⅛	95⅛	92⅛	98	854	Ex War	1937	7		
...	...	115⅛	113⅛	115	113⅛		62	People's Gas & Coke	1943	6	A. O.	10,000
...	...	108⅛	102	105⅛	101⅛	54	951	Refunding	1947	5	M. S.	40,000
102⅛	102⅛	104	102⅛	104⅛	101⅛	649	4,618	Standard Oil N. J.	1946	5	F. A.	120,000
108⅛	108	115⅛	101⅛	101⅛	98⅛	92	482	Tenn. Cop. and Chem	1941	6	A. O.	3,000
...	...	91⅛	82	95⅛	91	6	79	Va. Iron C. & C				
								NEW YORK CURB				
99⅛	99⅛	...	...	99⅛	95⅛		196	Agri. Mtge. Bk. of Col 46	1946	7	J.O.	...
...	...	...	...	99⅛	96		353	Agri. Mtge. Bk. of Col.	1947	7	J.J. 15	3,000
101⅛	101⅛	103⅛	100	105⅛	105	464	3,631	Alum. Co. of Am 52	1952	5		
...	...	...	...	101⅛	99		609	American Cyan.	1942	5	A. O.	5,000
...	...	101⅛	100	102⅛	101⅛	96	908	Anaconda Cop	1929	6	J. J.	25,000
99⅛	99⅛	101⅛	98⅛	99⅛	95⅛	233	2,454	Koppers Gas and Coke	1947	5	J. D.	25,000
...	...	103⅛	98	103	98	12	141	Natl. Dist. Prod.	1935	6⅛	J. D. 15	3,500
95⅛	95⅛	98⅛	93⅛	98	95⅛	251	3,573	Shawinigan W & P	1967	4⅛		
100⅛	100⅛	106⅛	100	100⅛	100	11	41	Silica Gel	1952	6⅛		
...	...	100	95⅛	99⅛	96	18	869	Solvay Am. Invest. Corp.	1942	5	M. S.	15,000
100	99⅛	101⅛	99⅛	100⅛	99	253	2,108	Swift & Co.	1932	5	A. O.	50,000
...	...	99⅛	91	99	90		202	U. S. Ind. Alc.	1941	6⅛	M. N.	...
...	...	107	100	103⅛	98⅛	17	322	Westvaco Chlorine Prod.	1937	5⅛	M. S.	2,500
								BOSTON				
...	...	103	101	102⅛	101	11	289	Swift and Co.	1944	5	J. J.	50,000
								CHICAGO				
...	...	103	101⅛	103⅛	101⅛	7	113	Swift and Co.	1944	5	J. J.	50,000
...	...	...	...	101⅛	99			Westvaco Chlorine Prod.	1937	5⅛	M. S.	2,000

Devoe & Raynolds' Extra Dividend

Devoe & Raynolds Co., Inc., declares extra dividends of 20c each on Class B and Class A common in addition to regular quarterly of 60c each, all payable October 1 to stock of record September 21. Regular quarterly dividends of $1.75 each on first and second preferred stocks also were declared, payable October 1 to stock of record September 21.

I.Wyman Drummond has resigned as chairman and de Lancey Kountze, former treasurer, has been elected to succeed him. A. T. Stephan has been appointed treasurer, succeeding Mr. Kountze.

United States Gypsum Co. reports for six months ended June 30, 1928, net income of $3,334,487 after depreciation, federal taxes, etc., equivalent after 7% prefered dividend requirements, to $4.42 a share (par. $20) earned on 691,502 shares of common stock. This compares with $3,892,302 or $5.24 a share earned on 687,870 shares in first half of 1927.

Stockholders of Lancaster Mills, Boston, have approved partial liquidation by authorizing directors to dispose of machinery not considered possible of profitable operation, and real estate, tenements, building, supplies, etc., not necessary for operation of remaining machinery.

Archer-Daniels-Midland Offers Rights

Archer-Daniels-Midland Co. offers to stockholders of record August 17 the right to subscribe for one share of common stock at $50 a share for each eight shares of common held. The value of each right is approximately $4.

As of May 31 there were 213,712 shares of common stock outstanding. Recently the company increased its common stock to 350,000 shares of no par value from 225,000.

Recently Archer-Daniels-Midland Co. purchased the plant and business of William O. Goodrich & Co. of Milwaukee, the Fredonia Linseed Oil Works Co. of Fredonia, Kansas, and one-half of the linseed oil properties of American Linseed Oil Co. The company now has plants located in Minneapolis, St. Paul, Toledo, Chicago, Milwaukee, Portland, Fredonia, Kansas, Edgewater, N. J., Staten Island and Boston.

E. I. du Pont de Nemours Co., Inc., declares regular quarterly dividends of $2.50 on common and $1.50 on debenture stock, former payable September 15 to stock of record August 31 and latter October 25 to stock of record October 10.

Allied Chemical & Dye Corp. declared regular quarterly dividend of $1.75 on preferred, payable October 1 to stock of record September 11.

The Industry's Stocks

1928 Aug. 31 Bid	1928 Aug. 31 Asked	1928 High	1928 Low	1927 High	1927 Low	Sales In Aug.	Sales Since Jan. 1, '28	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1927	Earnings $-per share-$ 1926
								NEW YORK STOCK EXCHANGE					
76¼	77	78¾	59	199½	134½	96,600	375,600	Air Reduction	No	223,445	$5.00	9 mo. 12.63	10.83
203	203¾	205	146	169¼	131	195,900	1,541,600	Allied Chem. & Dye	No	2,178,109	6.00	10.02	9.79
122¾	123	...	...	124	120	1,500	19,670	7% pfd.	100	392,849	6.00		61.28
19½	19¾	23¼	15⅝	21½	8¼	24,400	270,820	Am. Agricultural Chem.	100	333,221	2.00	Nil	...
70½	71¼	76½	55⅝	72¼	28¼	44,200	309,920	pfd.	100	284,552	1.50		3.59
110	110½	112¼	70½	77¾	43¾	1,698,100	7,927,160	American Can	25	2,473,918	2.00	4.11	4.38
140	142	...	...	141½	126	3,700	35,460	pfd.	100	412,333	7.00	31.66	33.31
120	122	123¾	56⅜	72½	20½	90,800	1,993,020	American Linseed	100	167,500	...		...
120	128	...	...	92¼	46¾	700	73,560	pfd.	100	167,500	7.00	7 mo. 6.00	.62
49⅛	49½	51	39	49¾	36¼	21,500	278,520	American Metal Ltd.	No	594,278	4.00	9 mo. 3.64	3.88
110	111	...	...	113½	108	400	23,896	pfd.	100	50,000	7.00	9 mo. 50.27	53.15
248⅞	249½	250¾	169	188¾	132¾	36,500	2,123,780	Amer. Smelt and Refin.	100	609,980	7.50	6 mo. 19.64	23.38
135	136	...	...	133	119¼	1,600	35,100	pfd.	100	500,000	7.00	6 mo. 17.01	35.52
32½	32¾	32¾	6⅜	10¼	5¼	108,500	876,100	Amer. Zinc & Lead	25	193,120	...	9 mo. Nil	...
91	92½	98	40	51¼	35	13,400	550,600	pfd.	25	96,560	...	9 mo. 2 31	...
76¼	76¾	77	53¾	60½	41¼	620,800	5,248,420	Anaconda Copper Mining	50	3,000,000	3.00		4.74
79	80	3⅞	3⅛	63	38	21,400	280,280	Archer Dan. Mid.	No	200,000	...	5.76	6.35
113½	114	115¼	112¾	112¾	106	170	2,680	pfd.	100	43,000	7.00	37.31	35.23
81	83	101	63	70	56½	1,500	36,200	Atlas Powder Co.	No	260,393	4.00	5.75	7.04
104¾	105	...	...	107	98	250	3,488	pfd.	100	90,000	6.00	6 mo. 22.71	26.46
169	170	171½	95¾	131⅜	104	483,500	1,740,380	Atlantic Refining	100	500,000	...	9 mo. Nil	11.24
8	8¼	10	4¼	5½	3¾	40,900	317,820	Butte Copper & Zinc	5	600,000	.50	9 mo. 0.09	.32
10	10½	16¼	8¼	11¾	7¾	42,200	278,160	Butte Superior Mng.	10	290,197	2.00	9 mo. 0.23	1.71
70	71¼	80¼	65	92½	66	8,200	55,220	By Prod. Coke	No	189,931	3.00	9 mo. 4.84	6.00
2⅞	3	5¾	1¾	2¾	1¼	54,600	479,960	Calla Lead & Zinc	10	723,355	...	9 mo. 0.08	...
29⅜	29⅝	29¾	20⅛	24¾	14¼	168,600	861,720	Calumet & Hecla	25	2,005,502	1.50	9 mo. 0.29	.75
45	45½	63½	40⅜	55¾	42	32,300	796,220	Certainteed Prod.	No	307,000	4.00	9 mo. 6.07	6.02
94½	96½	...	...	118¾	106	300		1st pfd.	100	43,000	7.00	9 mo. 56.80	54.30
50¼	50⅞	50½	37⅜	44⅛	33½	137,000	1,090,730	Chile Copper	25	4,435,595	2.50	6 mo. 0.62	2.65
90	91	90¼	79	101¼	66½	11,200	106,040	Columb Carbon	No	204,131	4.00	9.41	6.51
176	178	189½	137¼	203	145	68,400	374,900	Commercial Solvents	No	108,861	4.00	9 mo. 9.24	14.13
114	114½	125	80¼	86⅞	58⅜	528,000	1,733,560	Cont. Can	No	620,000	6.00	7 mo. 7.54	6.36
124⅜	128	...	...	126	120	50	2,270	pfd.	100	52,930	7.00	7 mo. 86.82	70.55
82¼	83	85⅜	64⅜	68	46⅛	256,200	1,546,800	Corn Products	25	2,530,000	2.00	9 mo. 4.01	4.03
140½	145	...	...	142½	128	200	11,400	pfd.	100	250,000	7.00	9 mo. 47.62	47.73
54½	55½	59½	34⅜	48½	26½	187,300	1,169,660	Davison Chem.	No	310,000	...		...
53	53½	61	40	42¾	36½	10,600	272,600	Devoe & Rayn A.	No	95,000	2.40	(†) 5.47	5.22
113½	114¾	...	...	114½	101	20	2,410	1st pfd.	100	18,096	7.00	6 mo. 53.23	49.70
115	115½	...	...	118	105½	2,650	41,590	Dupont deb.	100	795,212	6.00	9 mo. 57.04	52.51
390	395	405⅞	310	343¾	168	19,400	427,960	Dupont de Nemours	No	2,661,658	9.50	15.45	13.98
183½	184	194¼	163	175½	126½	31,900	273,940	Eastman Kodak	No	2,055,340	5.00		9.50
123½	129	132¼	123½	131½	119¼	160	1,102	pfd.	100	61,657	6.00		322.11
140	145	145	120	97	75½	800	4,800	Fed. Mining & Smelting	100	50,400	...	23.36	35.95
75½	76	77¼	65	71½	46¼	316,400	1,888,620	Fleischmann	No	4,500,000	3.00	4.30	4.08
62	62¼	109½	55	106½	34	222,500	2,658,820	Freeport Texas	No	729,733	4.00	9 mo. 5.24	2.48
75¼	76	84⅛	58	96¼	65	76,600	1,574,700	General Asphalt	100	243,550	...	6 mo. 5.00	8.11
115	119½	...	...	144½	107½	3,800	46,720	pfd.	100	68,742	5.00	6 mo. 4.20	27.58
103	104¼	105⅜	71	78¾	42	234,300	2,451,820	Gold Dust	No	318,586	...	6.20	3.01
76	76¼	77	64⅛	70⅜	43½	27,900	140,810	Household Prod.	No	575,000	3.50	6 mo. 5.22	5.22
15⅝	16	...	...	16⅜	6½	14,500	255,300	Intern. Agri.	No	441,695	...	Nil	1.60
77	78	...	...	65	33	2,200	75,000	pfd.	100	100,000	...	Nil	14.06
108½	108¾	115¼	73¾	89½	38½	1,409,700	10,173,600	Intern. Nickel	25	1,673,374	2.00	9 mo. 2.26	3.00
109½	112½	125	10½	110	103¾			pfd.	100	89,126	6.00	9 mo. 46.94	62.35
54½	56	...	...	75	63	480	9,768	Intern. Salt	100	60,771	6.00	6 mo. 2.64	8.35
136½	137	134¾	96½			457,600	1,239,860	Johns-Mansville	No	750,000		4.69	4.34
74½	74¾	77⅞	63½	78¼	45	28,300	472,800	Liquid Carbonic Corp.	No	125,000	3.60	5.90	11.34
46¾	47	57¾	45	58¼	43	2,600	37,040	Mac and Forbes	No	376,748	2.00	9 mo. 2.36	3.30
145	146	147	117½	132¾	82	62,000	310,860	Matheison Alk.	No	147,207	6.00	9 mo. 11.27	9.88
122	125	...	...	120	103	70	945	pfd.	100	24,750	7.00	9 mo. 74.06	67.85
21¾	22	22⅛	17¾	20¼	13	63,100	319,900	Miami Copper	5	747,114	1.50		1.52

1928 Aug. 31 Bid	Asked	1928 High	Low	1927 High	Low	Sales In Aug.	Since Jan. 1, '28	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1927	1926
43½	43⅞	58½	29½	56½	17	96,100	526,540	National Dist. Prod	No	167,651	...	9 mo. 0.54	...
65	66½	71⅜	51½	69½	43	8,500	31,860	pfd	No	109,795	...	9 mo. 1.62	...
125	127	136	115	202½	95	4,000	59,680	National Lead	100	206,554	8.00	10.25	35.33
144½	145	147½	139	139½	131½	700	10,020	pfd A	100	243,676	7.00		
120½	...	...	...	116½	104½		7,680	pfd B	100	103,277	6.00		
28½	29	7	2¼	27⅛	19⅛	24,000	423,000	Penick & Ford	No	433,773	...	9 mo. 2.04	1.37
181	183	189½	157	168½	126	4,500	195,880	Peoples Gas Chi	100	60,000	8.00	11.15	11.04
43½	43⅞	49	37	43½	36	23,400	267,700	St. Joseph Lead	10	1,951,517	2.50	1.85	4.21
44½	45	49	37½	41½	35½	279,800	3,341,220	Standard Oil Co of N. J	25	24,262,532	1.00		5.01
35½	35½	41½	28½	34½	29½	351,800	4,220,580	Standard Oil Co. of N. Y	25	17,023,928	1.60	0.90	1.94
14¼	14⅜	16½	10½	13¼	8½	51,500	458,300	Tenn. Cop. & Chem	No	794,624	1.00		1.31
73½	63½	80½	62¼	81⅜	49	398,300	3,890,540	Texas Gulf Sulfur	No	2,540,000	4.00	4.76	3.69
171¼	172	172½	136½	154½	98¾	282,700	1,774,600	Union Carbide	No	2,827,470	6.00	9 mo. 6.64	9.07
10	14½	15	5	10	3½			United Dyewood	100	139,183	7.00	9 mo. Nil	...
72⅞	74	...	...	49	36½	290	2,670	pfd	100	39,500	...	6 mo. 2.72	3.88
122½	123½	122¼	102¼	111⅜	69	1,591,100	905,980	U. S. Ind. Alc	100	240,000	5.00	6.00	7.04
120½	121	...	...	121	107½	170	3,030	pfd	100	60,000	7.00		35.16
49	49½	5½	...	48¾	26⅜	7,900	151,490	Va. Car. Chem Com. 6% pfd	100	213,350	...		6.73
94	95	...	...	91	73	3,400	31,090	7% pfd	100	142,910	7.00		17.54
High	**Low**							**NEW YORK CURB**					
26	26	31½	22	31½	30	6,300	60,970	Acetol Prod	No	60,000			
140	140	197½	120	145½	67¼	3,700	107,870	Aluminum Co. of America	No	1,427,625	...	4.02	...
...	...	...	...	43½	25			"B"	20	263,772	1.20	3.09	3.49
17⅜	17	24	13	18¼	3½	19,300	220,440	Amer. Rayon Prod	No	110,000	1.00		Nil
34½	33½	41⅞	25½	29	11	5,300	147,340	Amer. Solvents & Chem. pfd	No	160,000	...		Nil
...	...	51	26½	31½	14	5,300	155,600	Anglo Chile Nitrate	No	1,756,750	...	Loss	Loss
...	...	...	...	43½	22	100		Canad. Ind. Alc	No	800,000	1.28	2.49	2.63
...	...	...	...	...	...	10		Casein Co					
70½	67½	103	53½	117	44	18,000	195,940	Celanese Corp of Am	No	1,000,000	...	1.91	1.80
...	...	122	80	129¾	60	600	19,900	Celluloid Co	100	70,980	...		...
...	...	...	...	133½	113½	100	5,690	1st pfd	100	24,551	...		...
...	...	69½	49	91	84	650	5,730	Celotex pfd	No	164,730	3.00		5.06
...	...	161	117½	126	76½			Chesebro Mfg Co	25	120,000	4.00		8.06
22½	22½	24⅞	21¼	38¼	24⅛	3,400	48,420	Courtaulds	£1	£12,000,000	16⅔%		18.18
...	...	245	192	202	180	20	1,018	Hercules Powder	100	147,000	16.37	9 mo. 16.37	18.18
...	...	124	118½	121	114	100	1,010	pfd	100	111,392	7.00	28.04	30.82
...	...	13⅜	4½	10	7½	700	12,680	Heyden Chem	10	150,000	...		0.32
83¾	83½	97	78½	24½	4½	11,400	667,380	Indus. Rayon "A"	No	452,544	...		2.27
...	...	80	38½	39	37½	1,300	10,560	Monsanto Chem	No	110,000	2.50	6.11	5.60
...	...	260	180¼	194¾	178			N. J. Zinc	100	490,816	8.00	14.34	14.34
...	...	...	...	112	60½	5,100	91,540	Palmolive Peet	No	1,500,000	...	5.04	2.86
...	...	...	...	105½	84		20,480	Penn Salt	50	150,000	5.00	8.09	6.08
...	...	...	...	14⅜	8	700	13,480	Pyrene Mfg	10	223,158	2%	6.42	2.38
...	...	...	...	335	160	475	3,575	Royal Baking Powder					
...	...	...	...	110	100		1,130	pfd					
...	...	80	65½	68½	44	25	1,725	Sherwin Williams	25	594,445	3.00	6.42	5.59
24⅜	23½	29	17	20½	13½	18,600	104,520	Silica Gel	No	600,000	...		...
75½	74⅞	83¾	70¼	81½	64⅜			Standard Oil Co. of Indiana	25	9,136,618	...		6.03
...	...	10	6½	12	5	300	9,900	Snia Viscosa	150 lire	6,666,666⅔	.72		6.86
...	...	...	...	21	13⅞			Swan & Finch	25	34,458	.87½		...
133	132	137	125	130	115½	1,900	43,630	Swift & Co	100	1,500,000	8.00	8.13	10.43
540	516	630	450	499	145	1,380	79,648	Tubize "B"	No	78,868	...		...
...	...	100	53½	110¼	82½	8,000	38,725	U. S. Gypsum	20	687,875	8%	10.10	11.35
74½	74	85¾	67	77	50½	5,200	110,600	Wesson Oil and Snow	No	300,000	4.00	5.26	8.71
								CLEVELAND					
...	...	120	104	115	74½	665		Cleve-Cliff Iron	No	400,000	4.00		
...	...	175	112¼	108	70	55		Dow Chem	No	100,000	4.00		...
...	...	...	...	106½	100	25		pfd	100	30,000	7.00		...
...	...	...	...	21½	15⅛	10		Glidden	No	400,000	2.00	3.03	3.41
...	...	102	96	100	84	884		pfd	100	71,922	7.00	6 mo. 23.91	25.98
...	...	62	47	135	127	9,205		Grasselli	100	215,704	...	11.27	10.24
...	...	111	105½	109½	102½	499		pfd	100	123,742	6.00		23.68
...	...	...	...	24½	4½			Indus. Rayon "A"	No	452,544	...		2.27
...	...	80	65½	70	44	708		Sherwin Williams	25	594,445	3.00	6.42	5.59
...	...	109½	106	109	104	171		pfd	100	125,000	6.00		...
...	...	27¾	25	...	...	420		Wood Chemical Prod. "A"	No	20,000	2.00		...
								PITTSBURGH					
...	...	88	84	33½	18	175	1,961	Am. Vitrified Prod	50	70,000	7.50	2.95	2.19
								CHICAGO					
...	...	69	49	86	53	1,925		Celotex	No	170,456	3.00	3.31	
...	...	92	80	92	82	1,430		pfd	100	52,534	7.00		
72	72	75	38½	39	37	3,660		Monsanto Chem	No	110,000	2.50	6.11	
132½	132½	136	124¼	130	115½	3,711		Swift & Co	100	1,500,000	8.00	8.13	10.43
...	...	...	...	152½	99			Union Carbide	No	2,827,470	6.00	9 mo. 6.64	9.07
...	...	100	55	110½	82	9,925		U. S. Gypsum	20	687,875	8%	10.10	11.35
								CINCINNATI					
...	...	...	...	125½	113½		222	Fleishmann pfd	100	12,295	6.00	1,589.49	1,501.80
275	274	300	249	250	177	1,477	18,753	Proc. & Gam	20	1,250,000	4.75		9.17
								BOSTON					
29½	29⅝	29½	20½	17⅞	14½	14,668	86,507	Calumet & Hecla	25	2,005,502	1.50	9 mo. 0.29	.75
...	...	135¼	124¼	130½	115	1,323	11,271	Swift & Co	100	1,500,000	8.00	8.13	10.43
								ST. LOUIS					
...	...	...	...	...	...		337	Certainteed Prod. pfd	100			56.80	
44½	44½	47½	39½	36	36	255	1,666	South Acid and Sulfur Co	No	52,000	3.00		...
								PHILADELPHIA					
94	94	109½	92	105½	74½	1,321	9,583	Penn. Salt	50	150,000	5.00	8.09	6.08
139½	140½	149¼	114½	118½	89½	56,000	1,007,403	United Gas Imp	50	2,130,088	...		4.59
								MONTREAL					
...	...	...	...	39½	20	...	....	Asbestos Corp	No	200,000	1.50		1.02
...	...	...	...	98	82½	...	....	pfd	100	74,561	7.00		
43½	43	...	...	43½	21½	...	....	Canada. Ind. Alc	No	(d)800,000	1.28	2.49	2.63
91	87½	...	...	*277½	67	...	....	Shawinigan W. & P	No	1,100,000	2.00	2.63	
...	...	...	...	207	142	...	....	Sherwin William of Can	100	40,000	6.00	8.84	9.54
...	...	...	...	127	117	...	....	pfd	100	34,350	7.00		
								BALTIMORE					
...	...	...	...	39½	37			Davison Chem	No	310,000	...		...
24½	24½	28¼	17	20½	15	820	28,008	Silica Gel	No	600,000	...		...
								UNLISTED					
...	...	...	...	...	...	...	....	Casein Co	100	21,196	7.00		7.10
...	...	...	...	...	...	...	....	Merck & Co pfd	100	33.950	4.00		7.60
...	...	...	...	...	...	...	....	Merrimac	50	70,560	...		...
...	...	...	...	...	...	...	....	Newport Chem	1	912,198	4%		

*Old stock. † Combined A & B. (b) June 18 to Dec. 30. (d) 1927 earnings on 969,480. (e) Bid & Asked. (f) Thru Jan. 28 (g) High low.

The Trend of Prices

Sale of Chemicals During August Best for Month in Many Years Past

Strength in Acetate of Lime, Acetic Acid and Methanol Feature—Mercury Advance is Sharp—Duty Advance on Sodium Silicoflouride Strengthens Position—Demand for Calcium Chloride and Copper Sulfate Lessens.

It would indeed be difficult to single out any one item or group of items as being outstanding from the point of view of sales consummated during the month just past. In practically every instance reports of good business during the month were heard. This is particularly striking for this season of the year, for sellers in recent years have been dragging those skeletons of curtailed operations and vacation periods from the closet to console themselves for the sharp drop in orders during the dog days of July and August.

Not so this year. All thoughts of a sharp Summer let down have been forgotten in the surprise at the manner in which orders have continued to come in during these supposedly barren months. It is true that some let down from the good business of the Spring was apparent, but by comparison with the Summer season of recent years, the period just past has been nothing short of astonishing.

Leading Items All Moving Well

All of the items which constitute the pulse of chemical movement, including caustic soda and soda ash, have been moving somewhat in excess of predictions with the result that an increasingly good Fall business is looked for. Looking over the list alcohol, methanol, calcium acetate, methyl acetone, mercury, calcium chloride and chlorate of soda come to mind as some of the items which have been outstanding for their firmness. With regard to the present alcohol position the alcohol institute has the following to say: "Sharp advances of industrial alcohol prices in 1928 have been created by a diminishing production and a steadily increasing demand for molasses in the United States.

"Prices for basic grades of molasses have advanced two cents a gallon above quotations a year ago, and predictions are made by some brokers here that the 1929 offerings will command three to four cents a gallon more than those now prevailing. The usual carry-over of stock ranges from 75,000,000 to 100,000,000 gallons annually, but this year will be 75 per cent. less than normal.

"The alcohol and stock-feed manufacturers of the United States require 300,000,000 gallons of molasses, the major portion of which is taken over by the 14 commercial alcohol producers composing the Industrial Alcohol Institute. They make 97 per cent. of the 85,000,000 wine gallons of industrial alcohol employed annually by the automotive, paint, varnish, drug, chemical and other legitimate users."

This bullish feeling in the alcohol market has had its effect on many other solvent materials. Ethyl acetate is up considerably from its position of last Spring and the market is really supported by consumer demand. Much the same is true of methyl acetone, and methanol. Calcium acetate is higher—though it has not advanced during the month—and in much better demand than it was two months ago.

For actual strength displayed in advances, mercury is probably the outstanding item of the list. Announcement last month of the formation of a Spanish-Italian selling combination to control the sale in Europe of the entire output of these two countries was expected to have a strengthening effect on the market, and the expectations were borne out with a vengeance during the closing days of the month. Since our last review of the market the price has advanced nearly $10.00 a flask and the tone of cables coming from abroad indicates that a buyer on this market who purchases at the present time will not regret the move later on. In view of these conditions sellers are not too anxious to dispose of large blocks of their stocks and term the market as "firm with strong tendencies which will almost certainly be followed by further advances". The sale of both grades of ammonia continued quite brisk up to the Labor Day holiday and August was a very successful month from the sellers' point of view. The long predicted drop in sales of ammonium chloride has not yet come to pass if sellers figures of tonnage moved mean anything. Importers do not seem visibly impressed with the reduction in price made by domestic manufacturers of chlorate of potash as there has been no curtailment in the volume of imports. It would seem however, that the wide margin of one cent pound which now rules between the two grades must have its effect in the long run. The demand which has been in evidence for the past two months for chlorate of soda had not abated at the close of the month, but it is hardly expected to continue far into September. In anticipation of an advance in the duty of sodium silicoflouride there was a perceptibly firmer tone to the market during the past few weeks and the wisdom of this feeling as borne out by the confirmation of these rumors just before going to press. It remains to be seen what further action the market will take with this increase in the import tariff.

Borax is another item which has been moving along in good value during the Summer months. This was to be expected following the drastic reduction in price some six weeks ago. No price reduction so sharp could go unnoticed and in this instance borax was no exception. While producers are not prepared to substantiate their claims with detailed figures there is no reason to doubt that sales have been accelerated by this move to capture wider markets.

Seasonal Articles Tapering Off

Among the seasonal items which had a very good movement during August, but which now face a period of sharp decline in sales volume are calcium chloride and copper sulfate. Sellers had predicted throughout the early months of the year that with a favorable break in weather conditions, all former years would be surpassed in sales volume. Complete figures of sales are not yet available, but leading producers do not hesitate to state that this season was even in excess of the predictions made many months ago. The decline in the demand for copper sulfate was sharply evident immediately after the fifteenth of August and at this writing, demand is at the low ebb for the year. Sellers welcome this breathing spell and preparations are being made for the advance of the annual export demand which usually gets under way early in October and continue well into the Spring.

Glycerin is consistent in its position, if nothing else. Hopeful predictions of a better demand just around the corner again failed to materialize during August with the usual result that the dynamite market was attended by a decline in price. A study of the imports of dynamite glycerin tell more than could volumes written on the subject. Based on the imports of the first half year the imports for all of 1928 will not exceed 5,000,000 pounds. Comparison with the 23,000,000 pounds exported in 1927 tells the story of the condition of the American market.

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

Acetone — The domestic market is holding firm with sellers quoting 14c @ 18c lb. as to quantity and position. The American demand is good and sellers are offering little if any, stocks for export. We quote from a London trade journal as an indication of conditions abroad: "A considerable change has taken place in the acetone position during the past week or so, both as regards values and available supplies. As the amount of acetone produced in this country is exceedingly limited, the British market in the material is dictated by the import position. Until five or six years ago the major supplies of acetone reaching this country came from the Continent. Within recent years, however, the introduction of the American material has meant a striking change in our sources of supply. When the American material first made its appearance in bulk a clash was avoided by a price agreement between the sellers of the American and the Continental acetone. At this time Continental material was a free import whilst the American, being a chemical produced by a fermentation process, was liable upon importation to 33⅓ per cent. Key Industry Duty. Later, a Treasury Exemption Order was issued removing the duty from synthetic acetone, and this gave the American product a tremendous advantage, virtually to the extent of the complete control of this market. Now, with very little warning, transatlantic supplies have ceased, and it is not known when they will commence again. American figures on output and consumption of acetone have not been available for some years, but from the figures on butyl acetate and butyl alcohol there is no indication of any retraction in the rate of increase of acetone production in the States. But, whatever be the cause, imports of American acetone have practically stopped and there seems to be practically no stocks available on spot in this country".

Acid Acetic — Sellers are holding to the schedule which was recently revised and with conditions in the consuming markets unchanged over the month, there is no further change in the market since last reported.

Acid Citric — Has been rather quiet during the month of August with buyers

1914	1927				Current	1928	
July	High	Low	Aver.		Market	High	Low
.....	.24	.24	.24	Acetaldehyde, drs 1c-1 wks...lb.	.18½	.21	.26	.18½
.....	.20	.20	.20	Acetanilid, tech, 150 lb bbl....lb.	.23	.24	.24	.23
.....	.29	.29	.29	Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.29	.35	.35	.29
.....	.38	.32	.37	Acetin, tech drums.....lb.				
.02½	.12	.12	.12	Acetone, CP, 700 lb drums c-1 wks.....lb	.....	.15	.15	.13
1918	1.65	1.65	1.65	Acetone Oil, drs NY.....gal.	1.65	1.75	1.75	1.65
.....	.42	.42	.42	Acetyl Chloride, 100 lb cby...lb.	.42	.45	.45	.42
				Acids				
1.50	3.38	3.38	3.38	Acid Acetic, 28% 400 lb bbls c-1 wks.....100 lb.	.....	3.63	3.63	3.38
.....	11.92	11.92	11.92	Glacial, bbl c-1 wk...100 lb	.....	12.79	12.79	11.92
.....	.98	.98	.98	Anthranilic, refd, bbls.....lb.	.98	1.00	1.00	.98
.....	.80	.80	.80	Technical, bbls.....lb.	.....	.80	.80	.80
1.00	1.60	1.25	1.38	Battery, cbys.....100 lb.	1.60	2.25	2.25	1.60
.23	.57	.57	.57	Benzoic, tech, 100 lb bbls...lb.	.57	.60	.60	.57
.07½	.08½	.08½	.08½	Boric, crys. powd, 250 lb bbls.....lb.	.08½	.11	.11	.08½
.....	1.25	1.25	1.25	Broenner's, bbls.....lb.	.....	1.25	1.25	1.25
1917	.85	.80	.84	Butyric, 100% basis cbys...lb.	.85	.90	.90	.85
1917	4.90	4.85	4.89	Camphoric.....lb.	.....	4.85	4.85	4.85
.....	.25	.25	.25	Carbolic, 10%, 50 gal bbls..lb.	.13	.14	.28	.13
.....	.15	.15	.15	Chlorosulfonic, 1500 lb drums wks.....lb.	.15	.16	.16	.15
1918	.37	.25	.29	Chromic, 99%, drs extra...lb.	.25	.30	.30	.25
.....	1 00	1.00	1.00	Chromotropic, 300 lb bbls..lb.	1.00	1.06	1.06	1.00
.53	.44½	.43	.43⅝	Citric, USP, crystals, 230 lb bbls.....lb.	.46	.59	.44½	.59
.....	.95	.95	.95	Cleve's, 250 lb bbls.....lb.	.95	.97	.97	.95
1918	.60	.57	.61	Cresylic, 95%, dark drs NY.lb.	.71	.73	.71	.68
1918	.70	.60	.63½	97-99%, pale drs NY....lb.	.73	.78	.74	.72
1918	.11	.10	.10½	Formic, tech 85%, 140 lb cby.....lb.	.11	.12	.12	.11
1918	.50	.50	.50	Gallic, tech, bbls.....lb.	.50	.55	.55	.50
1918	.74	.69	.72	USP, bbls.....lb.	...	.74	.74	.74
.....	1.00	1.00	1.00	Gamma, 225 lb bbls wks...lb.	1.00	1.06	1.06	1.00
1918	.57	.57	.57	H, 225 lb bbls wks.....lb.	.57	.63	.63	.57
.....	.67	.65	.65½	Hydriodic,USP,10%soln cbylb.	...	.67	.67	.67
.....	.45	.45	.45	Hydrobromic, 48%, coml, 155 lb cbys wks.....lb.	.45	.48	.48	.45
.....	.80	.80	.80	Hydrochloric, CP, see Acid Muriatic.....				
.03	.06	.06	.06	Hydrocyanic, cylinders wks lb.	.80	.90	.90	.80
.....	.11	.11	.11	Hydrofluoric, 30%, 400 lb bbls wks.....lb.	.....	.06	.06	.06
.....	.85	.85	.85	Hydrofluosilicic, 35%, 400 lb bbls wks.....lb.	.....	.11	.11	.11
.019	.05½	05½	.05½	Hypophosphorous, 30%, USP, demijohns.....lb.	.....	.85	.85	.85
.04	.13	.13	.13	Lactic,22%,dark,500 lb bbls lb.	.04¼	.05½	.06	.04¼
.....	.52	.52	.52	44%, light, 500 lb bbls ...lb.	.12	.12½	.13½	.12
.....	.60	.60	.60	Laurent's, 250 lb bbls.....lb.	.52	.54	.54	.52
1918	.07¾	.07¾	.07¾	Malic, powd., kegs.....lb.	.48	.60	.60	.48
1918	.01	.01	.01	Metanilic, 250 lb bbls.....lb.	.60	.65	.65	.60
.....	.21	.18	.19¼	Mixed Sulfuric-Nitric..... drs wks.....N unit	.07¾	08	.08	.07¾
.....	1.65	1.65	1.65	drs wks.....S unit	.01	.01½	.01½	.01
1.15	1.35	1.35	1.35	Monochloroacetic, tech bbl.lb.	.18	.21	.21	.18
1.30	1.70	1.70	1.70	Monosulfonic, F Delta bbls.lb.	.....	.65	.65	.65
.....	.95	.95	.95	Muriatic, 18 deg, 120 lb cbys c-1 wks.....100 lb.	.....	1.35	1.35	1.35
1918	.55	.55	.55	20 degrees, cbys wks..100 lb.	1.70	1.80	1.80	1.70
3.37½	5.00	5.00	5.00	N & W, 250 lb bbls.....	.85	.95	.95	.85
4.50	6.00	6.00	6.00	Naphthionic, tech, 250 lb.	.55	.59	.59	.55
.07½	.11½	.11	.11	Nitric, 36 deg, 135 lb cbys c-1 wks.....100 lb.	.....	5.00	5.00	5.00
.036	.08	.07	.07½	40 deg, 135 lb cbys, c-1 wks.....100 lb.	.....	6.00	6.00	6.00
.23	.19	.16	.16¾	Oxalic, 300 lb bbls wks NY..lb.	.10¾	.11	.11½	.10¾
1918	.50	.50	.50	Phosphoric 50%, 150 lb cby.lb.	.08	.08½	.08½	.08
.50	.45	.30	.41½	Syrupy, USP, 70 lb drs...lb	.....	.16	.16	.16
.....	.86	.86	.86	Picramic, 300 lb bbls.....lb	.....	.50	.50	.50
.22½	.27	.27	.27	Picric, kegs.....lb.	.40	.50	.50	.40
1918	.15	.15	.15	Pyrogallic, technical, 200 lb bbls.....lb.	.....	.86	.86	.86
1.00	1.60	1.60	1.60	Salicylic, tech, 125 lb bbl...lb.	.27	.32	.32	.27
1.00	1.20	1.20	1.20	Sulfanilic, 250 lb bbls.....lb.	.15	.16	.16	.15
.87½	1.10	1.10	1.10	Sulfuric, 66 deg, 180 lb cbys 1c-1 wks.....100 lb.	1.60	1.95	1.95	1.60
1.25	1.50	1.50	1.50	1500 lb dr wks.....100 lb.	.....	1.20	1.20	1.20
.....	42.00	42.00	42.00	60°, 1500 lb dr wks..100 lb.	.....	1.12½	1.12½	1.12½
.55	.30	.30	30	Oleum, 20%, 1500 lb drs 1c-1 wks.....100 lb.	.....	1.52½	1.52½	1.52½
.30½	.37	.29½	.32½	40%, 1c-1 wks net.....ton	.....	42.00	42.00	42.00
.....	.85	.85	.85	Tannic, tech, 300 lb bbls...lb.	.30	.40	.40	.30
				Tartaric, USP, crys, powd, 300 lb bbls.....lb.	.37	.38	.38	.34½
				Tobias, 250 lb bbls.....lb.	.....	.85	.85	.85

TRIETHANOLAMINE

IN CONTINUATION of its program involving the production of synthetic aliphatic organic chemicals, the Carbide and Carbon Chemicals Corporation is pleased to announce the commercial availability of the Ethanolamines, particularly Triethanolamine.

The Ethanolamines are three in number:

Monoethanolamine	boiling at	171°C @	757 mm.
Diethanolamine	boiling at	217°C @	150 mm.
Triethanolamine	boiling at	277°C @	150 mm.

They are all viscous, nearly colorless liquids, with an ammoniacal odor, freely soluble in water and strongly basic in nature.

The product now available as commercial Triethanolamine is, in fact, a mixture containing approximately 70-75% Triethanolamine, 20-25% Diethanolamine and 0-5% Monoethanolamine.

Commercial Triethanolamine is one of the most interesting products ever sponsored by this organization. It reacts both as an organic base and as an alcohol. It combines freely with fatty acids such as oleic and stearic to form soaps that are freely soluble not only in water but also in gasoline and oil. Small quantities of such soaps will emulsify a mixture of mineral oil and water to yield an excellent cutting oil.

Shaving soaps and facial creams that can be washed off with water can readily be produced by simple methods from the same soaps.

Triethanolamine can replace, in whole or in part, various organic alcohols such as phenol or glycerine in the manufacture of synthetic resins.

Small quantities of Triethanolamine added to organic liquids greatly increase their penetration into cellular materials such as wood or fibers. This increased penetration results partly from a lowering of the surface tension of the liquid, a property which Triethanolamine exhibits in a marked degree.

Finally, the Ethanolamines are among the most hygroscopic organic compounds known. Although Monoethanolamine is outstanding in this respect, commercial Triethanolamine is far more hygroscopic than either glycol or glycerine.

Among the many ramified uses of Triethanolamine, only a few of which are set forth above, there is probably one of special interest to you. Consult our technical department for further details.

CARBIDE AND CARBON CHEMICALS CORPORATION

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Unit of Union Carbide and Carbon Corporation

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

interested in a small way only. Quotations remain at 46c lb. for domestic and 59c lb. for imported.

Acid Cresylic — Sellers report a good volume of business during August and in this respect cresylic acid is in keeping with the general trend of the entire market. There is the usual range in price as to seller with pale acid held at 73c @ 78c gal. and dark at 71c @ 73c gal.

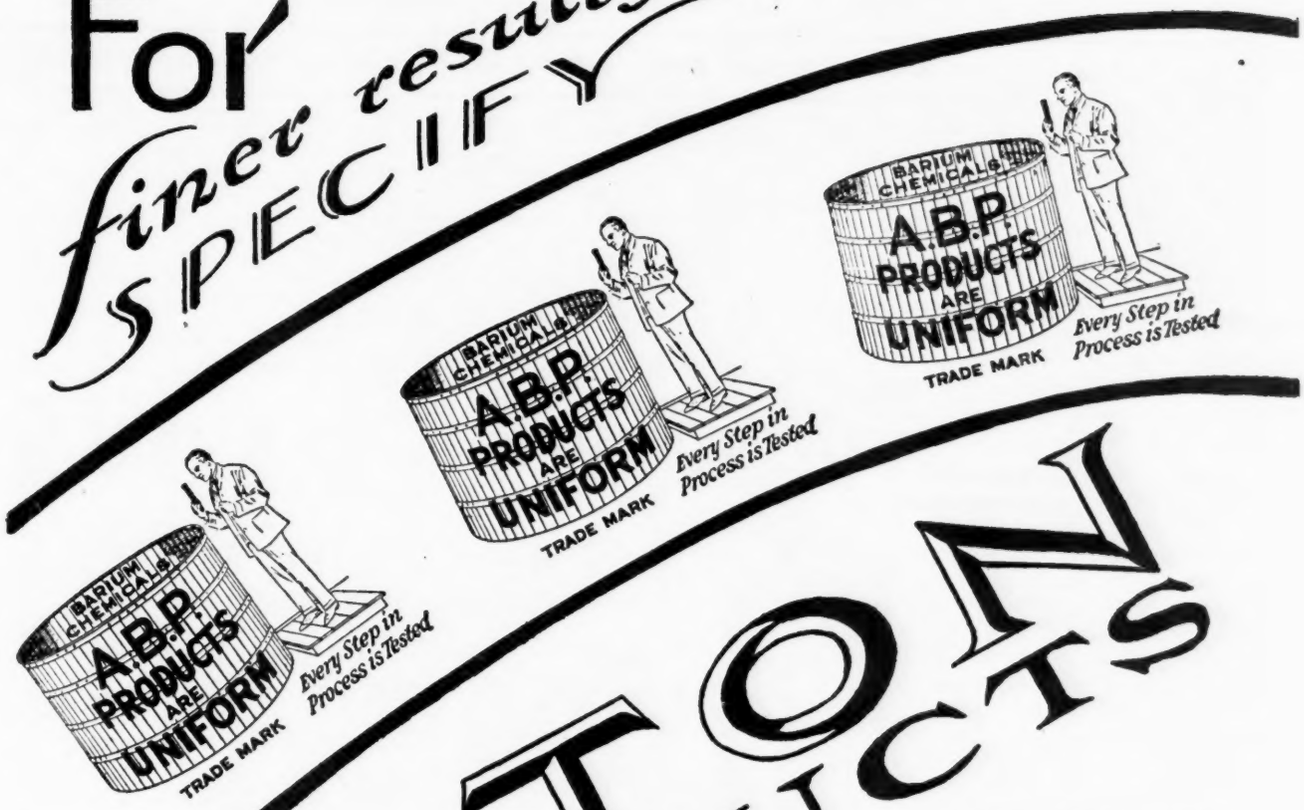
Acid Oxalic — The market was firm throughout the month with no change from the openly quoted levels of 10¾c @ 11½c lb. which domestic sellers established some months ago. In one quarter it is reported that demand is so brisk that shipments have again fallen behind the schedule.

Acid Tartaric — Has been without change during the month. Regular imports are being received on this market without any noticeable effect on the position.

Albumen — All interest in the egg albumen market has centered around the cost-of-production investigation pending before the United States Tariff Commission. According to the brief filed by domestic producers, higher tariff duties are supported by the State of Wisconsin, The National Poultry Council and the American Farm Bureau Federation. The brief asks that the Tariff Commission recommend to the President that the rates in paragraph 713, Tariff Act of 1922, be advanced as follows: Eggs in the shell, from 8 to 10 cents per dozen (or 25 per cent.). Whole eggs, egg yolk and egg albumen frozen or otherwise prepared or preserved, and not specially provided for, from 6 cents to 9 cents per pounds (or 50 per cent.) being the limit provided for in Section 315. Dried whole eggs, dried egg yolk and dried egg albumen from 18 cents per pound to 27 cents per pound (or 50 per cent.) which is also the limit provided for in Section 315 of the Tariff Act of 1922. Importers on the other hand hold that the rate is too high at present for effective competition and point to the fact that imports from China have constantly grown smaller. The brief states in part as follows: "If we refer again to the report of the Department for the month of May, 1928, we find that for the first five months of 1928 there were only 275,000 pounds of frozen yolks, 97,000 pounds of frozen whites, and 175,000 of frozen whole eggs imported during the first five months of this year, as against 1,572,000 pounds of frozen yolks, 1,546,000 pounds of frozen whites, and 2,002,000 pounds of frozen whole eggs in the corresponding period of 1927. In the case of

1914 July	1927 High	1927 Low	1927 Aver.			Current Market	1928 High	1928 Low
.....	2.75	2.00	2.60	Trichloroacetic, bottles	lb.	.....	2.75	2.75	2.75
.....	2.00	2.00	2.00	Kegs	lb.	.....	2.00	2.00	2.00
.....	1.00	1.00	1.00	Tungstic, bbls	lb.	1.00	1.25	1.25	1.00
.19	.45	.45	.45	Albumen, blood, 225 lb bbls	lb.	.43	.47	.55	.43
.40	.95	.80	.87	Egg, edible	lb.	.79	.84	.84	.79
.....	.92	.77	.82	Technical, 200 lb. cases	lb.	.70	.75	.80	.70
1918	.60	.60	.60	Vegetable, edible	lb.	.60	.65	.65	.60
.....	.50	.50	.50	Technical	lb.	.50	.55	.55	.50
.....	20	.19	.19½	Alcohol Butyl, Normal, 50 gal drs c-l wks	lb.	.....	18.25	.20	.18½
.....	.20½	.19½	.19½	Drums, 1c-1 wks	lb.	.....	18.75	.19½	.18½
.....	.19½	.18½	.19	Tank cars wks	lb.	.....	17.75	.19	.17½
.....	.....	.....	.....	Amyl (from pentane) drs c-l wks	gal.	1.75	2.25	2.25	1.75
1.70	1.70	1.70	1.80	Diacetone, 50 gal drs del	gal.	1.70	1.80	1.80	1.70
2.50	3.70	3.70	3.70	Ethyl, USP, 190 pf, 50 gal bbls	gal.	.....	2.69½	3.70	2.65
.....	.50	.50	.50	Anhydrous, drums	gal.	.....	.66½	.55	.50
1919	.52	.37½	.46	Completely denatured, No. 1, 190 pf, 50 gal drs drums extra	gal.	.....	.48	.52	.48½
1918	.50	.29	.42	No. 5, 188 pf, 50 gal drs. drums extra	gal.	.....	.47	.50	.43
.....	.46	.25	.40	Tank, cars	gal.	.....	.43	.46	.41
.....	1.00	1.00	1.00	Isopropyl, ref, gal drs	gal.	1.00	1.25	1.25	1.00
.....	1.00	1.00	1.00	Propyl Normal, 50 gal dr	gal.	.....	1.00	1.00	1.00
.....	.80	.80	.80	Aldehyde Ammonia, 100 gal dr lb		.80	.82	.82	.80
1918	.65	.65	.65	Alpha-Naphthol, crude, 300 lb bbls	lb.	.....	.65	.65	.65
1917	.35	.35	.35	Alpha-Naphthylamine, 350 lb bbls	lb.	.35	.37	.37	.35
1.75	3.25	3.15	3.08½	Alum Ammonia, lump, 400 lb bbls, 1c-1 wks	100 lb.	3.25	3.30	3.30	3.25
5.00	5.25	5.25	5.25	Chrome, 500 lb casks, wks	100 lb.	5.25	5.50	5.50	5.25
4.00	3.50	3.10	3.43	Potash, lump, 400 lb casks wks	100 lb.	3.10	3.20	3.20	3.10
5.00	5.25	5.25	5.25	Chrome, 500 lb casks wks	100 lb.	5.25	5.50	5.50	5.25
.....	3.75	3.75	3.75	Soda, ground, 400 lb bbls wks	100 lb.	.....	3.75	3.75	3.75
17.00	27.00	26.00	26.08	Aluminum Metal, c-1 NY	100 lb.	.....	24.30	26.00	24.30
.....	.35	.35	.35	Chloride Anhydrous, 275 lb drums	lb.	.35	.40	.40	.35
.12	.17	.17	.17	Hydrate, 96%, light, 90 lb bbls	lb.	.17	.18	.18	.17
.....	.23	.23	.23	Stearate, 100 lb bbls	lb.	.18	.22	.24	.18
1.25	1.75	1.75	1.75	Sulfate, Iron, free, bags c-1 wks	100 lb.	.....	1.75	1.75	1.75
.87½	1.40	1.35	1.35½	Coml, bags c-1 wks	100 lb.	.....	1.40	1.40	1.40
.....	1.15	1.15	1.15	Aminoazobenzene, 110 lb kegs	lb.	....	1.15	1.15	1.15
				Ammonium					
.25	.13½	.10	.10½	Ammonia, anhyd, 100 lb cyl	lb.	13½	.14	.14	.13½
.04½	.03	.02½	.03	Water, 26°, 800 lb dr del	lb.	.....	.03½	.03	.03
				Bicarbonate, bbls., spot 100 lbs.,		6.00	6.50	.....	.....
.....	.21	.21	.21	Bifluoride, 300 lb bbls	lb.	.21	.22	.22	.21
.08	.08½	.08½	.08½	Carbonate, tech, 500 lb cs	lb.	.08½	.09	.09	.08½
6.25	5.05	4.85	5.00	Chloride, White, 100 lb. bbls. wks	100 lb.	4.65	5.15	5.15	4.65
.05½	.07	.05½	.06	Gray, 250 lb bbls wks	lb.	5.25	5.75	5.75	5.25
.10	.11	.11	.11	Lump, 500 lb cks spot	lb.	.11	.11½	.11½	.11
.....	.15	.15	.15	Lactate, 500 lb bbls	lb.	.15	.16	.16	.15
.15	.06	.06	.06	Nitrate, tech, casks	lb.	.06	.10	.10	.06
.....	.27½	.27½	.27½	Persulfate, 112 lb kegs	lb.	.26	.30	.38	.27½
.....	.18	.18	.18	Phosphate, tech, powd, 325 lb bbls	lb.	.....	.18	.18	.18
2.60	2.30	2.55	2.41	Sulfate, bulk c-1	100 lb.	.....	2.40	2.90	2.20
2.60	2.55	2.35	2.42	Southern points	100 lb.	.....	2.45	3.00	2.50
.....	59.70	56.85	57.56	Nitrate, 26% nitrogen 31.6% ammonia imported bags	ton	.....	60.85	60.85	60.85
.....	.55	.55	.55	Sulfocyanide, kegs	lb.	.55	.60	.60	.55
1.55	2.25	1.90	2.10½	Amyl Acetate, (from pentane) drs	gal.	1.90	2.25	2.25	1.90
				Alcohol, see Fusel Oil					
.10½	.15½	.15	.15	Aniline Oil, 960 lb drs	lb.	.15½	.16½	.16½	.15½
.32	.41	.41	.41	Annatto, fine	lb.	.41	.48	.48	.41
.....	.90	.90	.90	Anthraquinone, sublimed, 125 lb bbls	lb.	.90	1.00	1.00	.90
.....	.11½	.14	.12	Antimony, metal slabs, ton lots	lb.	.....	.12	.11½	.09½
.03½	.15½	.14	.15	Needle, powd, 100 lb cs	lb.	.....	.12	.12	.10
1918	.17	.17	.17	Chloride, soln (butter of) cbys	lb.	.17	.18	.18	.17
.06	.16½	.16½	.16½	Oxide, 500 lb bbls	lb.	.....	.12	.12	.10
.11½	.28	.25½	.26½	Salt, 66%, tins	lb.				
.18	.20	.16	.17½	Sulfuret, golden, bbls	lb.	.16	.20	.20	.16
.15	.42	.37½	.38	Vermilion, bbls	lb.	.38	.42	.42	.38
.14	.18	.18	.18	Archil, conc, 600 lb bbls	lb.	.17	.19	.19	.17
.08	.12	.12	.12	Double, 600 lb bbls	lb.	12	.14	.14	.12
.....	.16	.14	.15	Triple, 600 lb bbls	lb.	.15	.16	.16	.15
.....	.15	.12½	.13½	Argols, 80%, casks	lb.	.....	.08	.08	.08
.....	.08	.03	.06½	Coude, 30%, casks	lb.	.15	.16	.16	.15
.05½	.10½	.10½	.10½	Arsenic, Red, 224 lb kegs, cs	lb.	.10½	.11	.11	.10½
.03	.04	.03½	.04	White, 112 lb kegs	lb.	.04	.04½	.04	.03½
.....	14.75	14.75	14.75	Asbestine, c-1 wks	ton	.....	14.75	14.75	14.75
.....	47.50	47.50	47.50	Barium, Carbonate, 200 lb bags wks	ton	57.00	58.00	57.00	47.00
.13	.12	.12	.12	Chlorate, 112 lb kegs NY	lb.	.12	.12½	.12½	.12
30.00	65.00	57.50	60.70	Chloride, 800 lb bbl wks	ton	59.00	62.00	60.00	54.00
1916	.13	.13	.13	Dioxide, 88%, 690 lb drs	lb.	.13	.13½	.13½	.13
.....	.04½	.04½	.04½	Hydrate, 500 lb bbls	lb.	.04	.04½	.04½	.04½
.05½	.07½	.07½	.07½	Nitrate, 700 lb casks	lb.	.07½	.08	.08	.07½
17.00	23.00	23.00	23.00	Barytes, Floated, 350 lb bbls wks	ton	23.00	24.00	24.00	23.00
.....	.....	.....	.....	Bauxite, bulk, mines	ton	5.00	8.00	8.00	5.00
.39	.40	.37	.39	Beeswax, Yellow, crude bags	lb.	.36	.37	.38	.36
.40	.46	.38	.43	Refined, cases	lb.	.41	.42	.43	.41

For finer results SPECIFY



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Iron Oxide
(Venetian Red)

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

yolks the decrease was 83 per cent., in the case of whites 94 per cent., and in the case of whole eggs 92 per cent. We find similar changes in the case of imports of dried egg products, but perhaps not so marked because of the fact that there are uses for which dried egg products alone can be employed. We think the figures speak for themselves. Not only is an increase in duty unnecessary, but a decrease actually is needed if production costs in the two countries are to be equalized and healthy foreign competition maintained."

Alcohol — The regular scheduled advance of 1c gal. marks the only change in the position of the market since our last report. Practically all of the large contract business for the coming season has been cared for and as it is a bit early to expect withdrawals against these contracts, producers are sitting back awaiting the annual withdrawal rush. According to figures released by the Industrial Alcohol Institute late in August the combined total production by all members of the institute during July was 8,142,650 wine gallons of ethyl. Combined inventory for the same period showed 4,209,414 wine gallons of ethyl, 6,702,290 wine gallons of completely denatured and 906,340 gallons of specially denatured.

Ammonia — Both grades continued in much the same position during the month of August. Anhydrous still moved briskly during the period and producers had no trouble in disposing of their offerings. Prices of 13½c lb. on anhydrous and 3¼c lb. on aqua were strongly maintained.

Ammonium Chloride — Moved about the same in July with some good sized orders in the market toward the end of August. Importers have not been successful in meeting the $4.65 100 lb. level which domestic sellers are taking carload business at. As a result the lack of competition gives the market a quiet appearance.

Ammonium Bicarbonate — As a result of the 25c lb. 100 reduction last month by domestic producers some additional business has been noted during the month, but on the whole the position is quiet. At best, the field is limited, and the real result of the reduction is not expected until the next contract season rolls around again.

Ammonium Persulfate — Demand has now set in in earnest and sellers report no trouble in getting the openly quoted market price of 26c @ 29c lb. as to quantity and delivery. Stocks are in fairly good supply as a result of the accumulation during the Summer months.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.47½	.58	.56	.57½	White, cases.....lb.	.56	.58	.58	.56
.....	.65	.65	.65	Benzaldehyde, technical, 945 lb drums wks.....lb.	.65	.70	.70	.65
.....	.23	.21	.22	Benzene, 90%, Commercial, 8000 gal tanks wks.....gal.	.....	.22	.23	.21
.....	.23	.21	.22½	CP, tanks works.....gal.	.....	.22	.23	.21
.....	.70	.70	.70	Benzidine Base, dry, 250 lb bbls.....lb.	.70	.74	.74	.70
.....	1.00	1.00	1.00	Benzoyl, Chloride, 500 lb drs..lb.	.....	1.00	1.00	1.00
.....	.....	.....	.....	Benzyl, Chloride, tech drs....lb.	.....	.25	.25	.25
.....	.24	.24	.24	Beta-Naphthol, 250 lb bbl wk.lb	.24	.26	.26	.24
.....	1.35	1.35	1.35	Naphthylamine, sublimed, 200 lb bbls.....lb.	.....	1.35	1.35	1.35
.....	.63	.63	.63	Tech, 200 lb bbls.....lb.	.63	.65	.65	.63
75.00	80.00	80.00	80.00	Blanc Fixe, 400 lb bbls wks...ton	80.00	90.00	90.00	80.00
1.20	2.25	2.00	2.23	Bleaching Powder, 300 lb drs c-1 wks contract....100 lb.	.....	2.25	2.25	2.25
.....	2.25	2.00	2.02	700 lb drs c-1 wks contract .....100 lb.	.....	4.00	2.00	2.00
3.00	3.75	4.75	4.47½	Blood, Dried, fob, NY.....Unit	.....	4.75	5.25	4.75
.....	.....	.....	.....	Chicago.....Unit	.....	4.75	5.35	4.75
.....	.....	.....	.....	S. American shipt.....Unit	.....	4.90	5.05	4.50
.27	.30	.28	.29	Blues, Bronze Chinese Milori Prussian Soluble.....lb.	.31	.35	.35	.31
28.50	38.00	29.00	29.04	Bone, raw, Chicago.....ton	29.00	30.00	30.00	29.00
.....	.06	.06	.06	Bone, Ash, 100 lb kegs.....lb.	.06	.07	.07	.06
.02½	.08½	.08½	.06	Black, 200 lb bbls.....lb.	.....	.08½	.08½	.08½
20.00	30.00	28.00	29.46	Meal, 3% & 50%, Imp....ton	.....	32.00	37.00	32.00
.04	.04½	.04½	.04½	Borax, crys, 500 lb bbls.....lb.	.02½	.03½	.05	.02½
.07	.11	.11	.11	Bordeaux, Mixture, 16% pwd.lb.	.11	.12	.12	.11
.03½	.08	.08	.08	Paste, bbls.....lb.	.08	.10	.10	.08
55.00	28.00	26.00	27.30	Brazilwood, sticks, shpmt.....lb.	26.00	28.00	28.00	26.00
1918	.60	.60	.60	Bronze, Aluminum, powd blk.lb.	.60	1.20	1.20	.60
.....	.55	.55	.55	Gold, bulk.....lb.	.55	1.25	1.25	.55
.....	1.60	1.42	1.52	Butyl, Acetate, normal drs 1c-1 wks.....gal.	.....	1.45	1.60	1.60
.....	1.55	1.42	1.47½	Tank, drs wks.....gal.	.....	1.40	1.55	1.55
.....	1.00	1.00	1.00	Secondary, 50 gal drs.....gal.	1.00	1.05	1.05	1.00
.....	.70	.70	.70	Aldehyde, 50 gal drs wks...lb.	.....	.70	.70	.70
.....	.34	.34	.34	Propionate, drs.....lb.	.34	.36	.36	.34
.....	.60	.60	.60	Stearate, 50 gal drs.....lb.	.....	.60	.60	.60
.....	.57	.57	.57	Tartrate, drs.....lb	.57	.60	.60	.57
1918	1.50	1 35	1.42	Cadmium, Sulfide, boxes.....lb.	1.35	2.00	2.00	1.35
				Calcium				
.....	3.50	3.50	3.50	Calcium, Acetate, 150 lb bags c-1.....100 lb.	.....	4.00	4.00	3.50
.....	.07½	.07½	.07½	Arsenate, 100 lb bbls c-1 wks.....lb.	.06	.07	.08	.06
.....	.05	.05	.05	Carbide, drs.....lb.	.05	.06	.06	.05
.....	1.00	1.00	1.00	Carbonate, tech, 100 lb bags c-1.....lb.	1.00	1.00	1.00	1.00
1918	27.00	27.00	27.00	Chloride, Flake, 375 lb drs c-1 wks.....ton	.....	25.00	27.00	25.00
12.00	21.00	21.00	21.00	Solid, 650 lb drs c-1 fob wks .....ton	20.00	22.00	23.00	20.00
.....	52.00	52.00	52.00	Nitrate, 220 lb bbls c-1 NY.ton	.....	52.00	52.00	52.00
.....	.09	.09	.09	Phosphate, tech, 450 lb bbls.lb.	.07	.08	.08	.07
.....	.....	.....	.....	Camwood, Bark, ground bbls.lb.	.....	.18	.18	.18
.22	.33	.33	.30½	Candelilla Wax, bags.....lb.	.23	.24	.28	.23
.....	.08	.08	.08	Carbon, Decolorizing, 40 lb bags c-1.....lb.	.08	.15	.15	.08
.....	.12	.12	.12	Black, 100-300 lb cases 1c-1 NY.....lb.	.....	.12	.12	.12
.06½	.05½	.05½	.05½	Bisulfide, 500 lb drs 1c-1 NY.....lb.	.05½	.06	.06	.05½
.....	.06	.06	.06	Dioxide, Liq, 20-25 lb cyl...lb.	.....	.06	.06	.06
.07½	.07	.07	.07	Tetrachloride, 1400 lb drs delivered.....lb.	.07	.07½	.07½	.07
.50	.50	.50	.50	Carnauba Wax, Flor, bags....lb	.52	.53	.58	.52
.....	.90	.54	.60½	No. 1 Yellow, bags.....lb.	.48	.49	.60	.48
.32	.37	.24	.31	No. 2 N Country, bags.....lb.	.35	.36	.38	.34
.42½	.68	.48	.56	No. 2 Regular, bags.....lb.	.41	.42	.56	.41
.....	.....	.....	.....	No. 3 N. C.....lb	.26	.27	.32	.26
.....	.....	.....	.....	No. 3 Chalky .....lb.	.26	.27	.32	.26
.....	.18½	.15½	.17	Casein, Standard, ground.....lb.	.16	.16½	.18½	.15
.....	.34	.26	.32½	Celluloid, Scraps, Ivory cs....lb.	.26	.30	.30	.26
.....	.18	.18	.18	Shell, cases.....lb.	.18	.20	.20	.18
.....	.34	.26	.32½	Transparent, cases.....lb.	.30	.32	.32	.30
.....	1.40	1.40	1.40	Cellulose, Acetate, 50 lb kegs..lb.	.....	1.40	1.40	1.40
.....	.03	.03	.03	Chalk, dropped, 175 lb bbls...lb.	.03	.03½	.03½	.03
.03	.02½	.02½	.02½	Precip, heavy, 560 lb cks...lb.	.....	.04½	.04½	.04½
.04	.04½	.04½	.04½	Light, 250 lb casks.....lb.	.02½	.03½	.03½	.02½
.....	.18	.18	.18	Charcoal, Hardwood, lump, bulk wks .....bu.	.18	.19	.19	.18
1918	.06	.06	.06	Willow, powd, 100 lb bbl wks.....lb.	.06	.06½	.06½	.06
.....	.04	.04	.04	Wood, powd, 100 lb bbls....lb	.04	.05	.05	.04
.....	.03	.02½	.03	Chestnut, clarified bbls wks,..lb.	.02½	.03	.03	.02½
.04	.02	.01½	.02	25% tks wks.....lb.	.01½	.02	.02	.01½
.....	.05½	.05½	.05½	Powd, 60%, 100 lb bgs wks.lb.	.....	.04 4/5	.04 4/5	.04 4/5
.....	.06½	.06½	.06½	Powd, decolorized bgs wks..lb.	.05½	.06	.06	.05½
8.00	8.00	8.00	8.00	China Clay, lump, blk mines.ton	8.00	9.00	9.00	8.00
.....	.01½	.01½	.01½	Powdered, bbls.....lb.	.01½	.02	.02	.01½
.....	10.00	10.00	10.00	Pulverized, bbls wks.....ton	10 00	12 00	12.00	10.00
14.00	15.00	15.00	15.00	Imported, lump, bulk. ton	15.00	25.00	25.00	15.00
.....	.03	.03	.03	Powdered, bbls.....lb	.03	.03½	.03½	.03
1918	.08	.08	.08	Chlorine, cyls 1c-1 wks contract .....lb.	.08	.09	.09	08
1917	.05½	.04	.04	Liq tank or multi-car lot cyls wks contract.....lb.	.....	.03½	.03½	03½
1918	.07	.07	.07	Chlorobenzene, Mono, 100 lb. drs 1c-1 wks.....lb.	.....	.07	.07	.07
.19	.20	.20	.20	Chloroform, tech, 1000 lb drs. .lb.	.20	22	22	.20
.....	1.00	1.00	1.00	Chloropicrin, comml, cyls....lb.	1.00	1.35	1.35	1.00

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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

Ammonium Sulfate — Although the fertilizer market, taken as a whole, has eased off considerably during the past month, this commodity is in a stronger position and has advanced in price, now being quoted at $2.40 per 100 pounds, with Southern points 5c per 100 pounds higher. Imports of fertilizers into the United States for the first six months of 1928 showed a marked general increase, according to the Department of Commerce. Synthetic nitrogenous fertilizers recorded an increase of 85 per cent. over the first six months of 1927 to 167,300 long tons; nitrate of soda imports increased 94 per cent. to 713,400 tons and potash fertilizers 71 per cent. to 339,975 tons. The group of fertilizer imports consisting of guano, dried blood, tankage and phosphates increased 37 per cent. to 107, 059 long tons, and imports of all other fertilizers 56 per cent. to 36,951 tons.

Fertilizers as a whole imported into the United States show an increase of approximately 80 per cent., from 758,593 to 1,367,506 long tons.

Antimony — Since last reported, the metal market has declined to 9⅞c lb. and then, in the face of increased activity, went as high as 10⅜c lb. At present, although in firm position, it has declined somewhat again, and is now at the same figure as when last quoted, 10c lb. Demand for both needle and oxide have held up well and are quoted at 12c lb.

Barium Carbonate — Importers on this market report a routine business during the weeks just past. Domestic makers are taking care of the mid-west demand at the market levels. On the Atlantic seaboard consumers are not buying in any great volume.

Barium Chloride — The tone of the New York market continues firm and in one instance a sale of over the $60.00 ton level for a good sized parcel was reported. American producers still seem to control the situation at this port and the market has a better tone now that imported stocks are not so heavy.

Benzene — As was the case last month a brisk movement is noted and the entire September output is now accounted for. The market is very firm at the 22c gal. level and while sellers do not anticipate any advance in price the current level is expected to be strictly maintained.

Bleaching Powder — Nothing more than the average amount of business has been recorded for the month, but sellers express themselves as satisfied with the condition of the market under the circumstances.

Blood — Has eased off during the past month and is now quoted at lower figures at all points. New York and Chicago are

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.17	.27	.26	.26¼	Chrome, Green, CP.....lb.	26	.29	.29	.26
.03½	.06½	.06½	.06½	Commercial.....lb.	06½	.11	.11	.06½
.11	.17½	.16½	.16½	Yellow.....lb.	15½	.16½	.17	.15½
.....	.05	.04½	.04¾	Chromium, Acetate, 8% Chrome bbls.....lb.	.04½	.05¾	.05¾	.04¾
1918	.05½	.05½	.05½	20° soln, 400 lb bbls.....lb.	.....	.05½	.05½	.05½
.....	.27	.27	.27	Fluoride, powd, 400 lb bbl..lb.	.27	.28	.28	.27
.....	.34½	.34½	.34½	Oxide, green, bbls.....lb	.34½	.35½	.35½	.34½
.....	9.50	9.00	9.08	Coal tar, bbls.....bbl	9.00	9.50	9.50	9.00
1.00	2.10	2.10	2.10	Cobalt Oxide, black, bags....lb.	2.10	2.22	2.22	2.10
.48	.92	.77	.85½	Cochineal, gray or black bag..lb.	.84	.87	.87	.84
.42	.92	.77	.87½	Teneriffe silver, bags.....lb.	.....	.86	.86	.86
13.75	13.57½	12.90	12.97	Copper, metal, electrol...100 lb.	.....	14.75	14.75	12.90
.13½	.16¾	.16¼	.16½	Carbonate, 400 lb bbls.....lb.	.16¼	.17¼	.17¼	.16¼
.....	.28	.28	.28	Chloride, 250 .lb bbls.....lb.	.....	.28	.28	.28
.....	.48	.48	.48	Cyanide, 100 lb drs.....lb.	.48	.50	.50	.48
.....	.16½	.16½	.16½	Oxide, red, 100 lb bbls.....lb.	.16½	.17	.17	.16½
.28	.18	.17	.18	Sub-acetate verdigris, 400 lb bbls.....lb.	.18	.19	.19	.18
4.00	5.00	4.75	4.91¾	Sulfate, bbls c-1 wks...100 lb.	....	5.30	5.30	5.05
13.00	17.00	13.00	13.33½	Copperas, crys & sugar bulk c-1 wks.....ton	13.00	14.00	14.00	13.00
.....	1.25	1.25	1.25	Sugar, 100 lb bbls.....100 lb.	1.25	1.35	1.35	1.25
.80	.40	.40	.40	Cotton, Soluble, wet, 100 lb bbls.....lb.	.40	.42	.42	.40
.....	42.00	20.00	33.75	Cottonseed, S.E. bulk c-1...ton	.....	.....	.....	.....
.....	42.00	20.00	29.85	Meal S.E. bulk.....ton	.....	.....	.....	.....
26.50	35.00	21.50	30.38	7% Amm., bags mills...ton	36.00	37.00	37.00	36.00
.23¾	.27	.22	.24	Cream Tartar, USP, 300 lb. bbls.....lb.	.26	.27½	.27½	.26
.53	.40	.40	.40	Creosote, USP, 42 lb cbys.....lb.	.40	.42	.42	.40
1918	.20	.20	.20	Oil, Natural, 50 gal drs....gal.	.17	.19	.19	.17
1918	.25	.25	.25	10-15% tar acid.....gal.	.21	.23	.23	.21
				25-30% tar acid.....gal.	.25	.28	.28	.25
1918	.17½	.17½	.17½	Cresol, USP, drums.....lb.	.17½	.20	.20	.17½
.07¼	.17	.16	.16½	Cudbear, English.....lb.	.16	.17	.17	.16
.05	.18½	.15	.18	Cutch, Rangoon, 100 lb bales.lb.	.....	.18½	.18½	.18½
.....	.05	.05½	.05½	Borneo, Solid, 100 lb bale...lb.	.06	.07	.07	.06
.....	1.82½	1.67½	1.78¾	Cyanamide, bulk c-1 wks Amm. .....lb.	.....	1.70	1.75	1.67½
.....	3.92	3.77	3.84½	Dextrin, corn, 140lb.bags 100 lb.	4.77	4.97	5.12	3.77
3.00	3.87	3.72	3.78½	White, 130 lb bgs.....100 lb.	4.72	4.92	5.07	3.72
.05½	.08½	.08½	.08½	Potato, yellow, 220 lb bgs...lb.	.08	.09	.09	.08
.05½	.08½	.08½	.08½	White, 220 lb bags 1c-1....lb.	.08	.09	.09	.08
.....	.08½	.08	.08	Tapioca, 200 lb bags 1c-1...lb.	.08	.08½	.08½	.08
.....	3.80	3.80	3.80	Diaminophenol, 100 lb kegs...lb				
.....	2.95	2.85	2.93½	Diamylphthalate, drs wks...gal.	.....	3.80	3.80	3.80
.....	3.25	3.25	3.25	Dianisidine, 100 lb kegs.....lb.	2.85	2.90	2.90	2.85
.....	.31½	.29½	.30½	Dibutylphthalate, wks.....lb.	.....	.28	.28	.28
.....	.55	.55	.55	Dibutyltartrate, 50 gal drs....lb.	.29½	.31½	.31½	.29½
.....	.23	.23	.23	Dichloromethane, drs wks....lb.	.55	.65	.65	.55
.....	2.15	2.15	2.15	Diethylamine, 400 lb drs.....lb.	.23	.25	.25	.23
.....	1.85	1.85	1.85	Diethyl carbonate, drs.....gal.	.....	2.15	2.15	2.15
1918	.55	.55	.55	Diethylaniline, 850 lb drs.....lb.	1.85	2.00	2.00	1.85
.....	.20	.20	.20	Diethyleneglycol, drs.....lb.	.55	.60	.60	.55
.....	.....	.....	.....	Mono ethyl ether, drs....lb	.13	.15	.15	.10
.....	.....	.....	.....	Mono butyl ether, drs....lb.	.25	.35	.35	.25
.....	.64	.64	.64	Diethylorthotoluidin, drs.....lb.	.64	.67	.67	.64
.....	.25	.25	.25	Diethyl phthalate, 1000 lb drums.....lb.	.24	.26	.26	.24
.....	.30	.20	.25	Diethylsulfate, technical, 50 gal drums.....lb.	.30	.35	.35	.30
.....	2.60	2.60	2.60	Dimethylamine, 400 lb drs....lb.	.....	2.62	2.62	2.62
1918	.32	.30	.31½	Dimethylaniline, 340 lb drs...lb	.30	.32	.32	.30
.....	.45	.45	.45	Dimethylsulfate, 100 lb drs...lb.	.45	.50	.50	.45
1918	.15½	.15	.15½	Dinitrobenzene, 400 lb bbls...lb.	.15½	.16½	.16½	.15½
.....	.18	.18	.18	Dinitrochlorine, 300 lb bbl....lb.	.18	.19	.19	.18
1918	.15	.15	.15	Dinitrochlorobenzene, 400 lb. bbls.....lb.	.15	.16	.16	.15
1917	.32	.32	.32	Dinitronaphthalene, 350 lb bbls .....lb.	.32	.34	.34	.32
1918	.31	.31	.31	Dinitrophenol, 350 lb bbls....lb.	.31	.32	.32	.31
1918	.18	.15	.17¼	Dinitrotoluene, 300 lb bbls....lb.	.18	.19	.19	.18
.....	1.05	.85	.88	Diorthotolyguanidine, 275 lb bbls wks.....lb.	.48	.49	.90	.48
1918	.48	.45	.45½	Diphenylamine.....lb.	.45	.47	.47	.45
.....	.....	.....	.....	Diphenylguanidine, 100 lb bbl.lb.	.40	.41	.72	.40
.....	.26	.26	.26	Dip Oil, 25%, drums.....lb.	.2C	.30	.30	.26
45.00	49.00	41.00	45.25	Divi Divi pods, bgs shipmt...ton	.....	58.00	62.00	58.00
.02½	.04	.04	.04	Extract.....lb.	.05	.05½	.05½	.05
1918	.84	.72	.67½	Egg Yolk, 200 lb cases.....lb.	.74	.77	80	.73
1.00	2.00	1.75	1.87½	Epsom Salt, tech, 300 lb bbls c-1 NY.....100 lb.	1.70	1.75	1.75	1.70
.22	.45	.37	.43	Esther, USP, 1880, 50 lb drs..lb.	.37	.38	.38	.37
.....	.90	.90	.90	Ethyl Acetate, 85% Ester, 110 gal drs.....gal.	.87	.89	.87	.75
.....	1.10	1.03	1.08	99%, gal drums.....gal.	.....	1.10	1.10	1.10
.....	1.05	1.05	1.05	Benzylaniline, 300 lb drs...lb.	1.05	1.11	1.11	1.05
.....	.50	.50	.50	Bromide, tech, drums.....lb.	.....	.70	.70	.70
.....	.22	.22	.22	Chloride, 200 lb. drums....lb.	.....	.22	.22	.22
.....	3.50	3.50	3.50	Lactate, drums works.....lb.	.30	.35	3.50	3.50
1918	.30	.30	.30	Methyl Ketone, 50 gal drs..lb.	.....	.30	.30	.30
.....	.45	.45	.45	Oxalate, drums works.....lb.	.45	.55	.55	.45
.....	.....	.....	.....	Oxybutyrate, 50 gal drs. wks. lb.	.30	.36	.36	.30
.....	.70	.70	.70	Ethylene Bromide, 600 lb dr..lb.	.....	.7C	.70	.70
.....	.75	.75	.75	Chlorhydrin, anhydrous, 50 gal drums.....lb.	.75	.85	.85	.75
.....	.15	.11	.11¼	Dichloride, 50 gal drums...lb.	.07	.10	.11	.07
.....	.30	.30	.30	Glycol, 50 gal drs wks.....lb.	.27	.30	.40	.25
.....	.....	.....	.....	Mono Butyl Ether drs. wks.	.27	.31	.27	.31
.....	.....	.....	.....	Mono Ethyl Ether drs. wks.	.20	.24	.20	.24
.....	.....	.....	.....	Mono Ethyl Ether Acetate dr. wks.	.23	.26	.23	26.
1918	.62	.62	.62	Ethylidenaniline.....lb.	.62	.65	.65	.62
8.00	20.00	20.00	20.00	Feldspar, bulk.....ton	20.00	25.00	25.00	$20.00
.....	15.00	15.00	15.00	Powdered, bulk works.....ton	15.00	21.00	21.00	15.00
.....	.07½	.07½	.07½	Ferric Chloride, tech, crystal 475 lb bbls.....lb.	..07½	.09	.09	.07½

News Notes

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1816 SEPTEMBER, 1928 1928

CHEMICAL BUSINESS RECOVERING FROM SUMMER SLUMP

With the turn of the month and the Labor Day holiday behind us, we have experienced an improvement in general business conditions, and we look forward to a continued improvement in the Fall months. We think that business generally will be good for the balance of the year. The months of July and August were rather quiet owing to general Summer dullness due in a great measure to warm weather and the vacation period, but fundamentally there is nothing wrong with business in this country to-day. There is, of course, the usual talk of business uncertainty in a Presidential Election year, but as we stated in a previous issue, we feel that this is more or less mythical, and is without foundation. We firmly believe that regardless of who comes into power, the chemical business of the United States will continue satisfactorily.

New developments in the industry and new processes are bringing about constant changes, but it will be and always has been our aim to keep abreast of the times, and to supply our customers with the products they require when and where they want them. Our large warehouse stocks located at convenient points to consuming centers enable us to render a service unsurpassed for prompt deliveries, and we welcome every opportunity to demonstrate our ability to cope with any situation which might arise.

No price changes of any consequence have taken place during the past few weeks, and while they might be considered generally firm, we would not say there is any upward tendency, except perhaps in a few items. We feel that some commodities are selling at too low levels, and there is bound to be some revision as time goes on.

Acetic Acid: About the middle of August an advance took place owing to a sharp increase in the price of ACETATE OF LIME. The 28% was increased 25c a 100, other grades proportionately.

Formic Acid: Continues in good demand with prices firmer.

Sal Ammonic, White Granular: The domestic manufacturers continue to dominate the market, although fair arrivals of the imported goods are noted.

Barium Chloride prices are firmer with indications of further advance.

Naphthalene Flakes & Balls: Contract withdrawals have been very heavy. The season has been somewhat backward, and while under normal conditions little interest is shown at this time of the year, it is to-day difficult to keep up with orders.

The Bichromates of Soda and Potash seem to be moving along well at the new price levels.

Acetate of Soda continues in good demand.

Chlorate of Soda has been a particularly good item for weed killing purposes.

O.T.J.—"Better come in out of the rain Old Timer, doctor's bills are high."
Consumer—"You said it; thanks, that's a real umbrella."

THIRTY YEARS AGO

The sinking of the "Maine" in Santiago Harbor resulted in a declaration of war with Spain on April 21 by President McKinley and congress.

The president and congress expressed their special thanks to Richmond P. Hobson for his exploit in the Santiago Harbor. He with a squad of men sank the dismantled Collier "Merrimac" in the entrance to the harbor.

Innis and Company was purchased by George V. Sheffield from Hasbrouck Innis and was being conducted by Mr. Sheffield as principal partner and operator.

The import of dyestuffs and chemicals for the textile and paper mills was the principal business of the Company; although the development in other fields was being continued a pace. In 1898 the Company had been in existence for eighty years and the good will of its customers after this long period of fair dealing was a big asset in the procurement of business.

ANNOUNCEMENT

We beg to announce at this time the removal of our Cleveland office and warehouse from 1913 Orange Avenue to the Greeley Terminal Company building at 2775 Pittsburgh Avenue, Cleveland, Ohio, in which warehouse we have arranged for increased floor space in order to properly care for our ever increasing business in that City.

We also take pleasure in advising the appointment of Mr. P. L. Frost, formerly of our New York office, as manager of our Cleveland branch to take the place of Mr. J. C. Hamilton, who due to illness has been forced to give up his work in Cleveland.

EDITORIAL

Our experience in business teaches us more and more, good will is necessary to success and we know that good will must be earned . . . that confidence which makes and keeps customers is the natural outgrowth of years of satisfaction rendered.

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

at $4.75 unit while South American is at $4.90 unit.

Borax — At the newly instituted level of 2½c lb. in carlots there has been an increase in demand from certain industries and with the approach of the Fall buying season this accelerated demand is expected to become more evident. While it is true that no great demand is apparent from industries which are expected to use borax at the new low levels, this situation will probably work out as anticipated when the reduction was put into force.

Calcium Acetate — In common with other products in this group, calcium acetate seems to thrive on its recently acquired strong position, and with the demand well maintained throughout the month of August, sellers have had no trouble in getting the openly quoted level of $4.00 100 lbs.

Calcium Chloride — According to predictions made earlier in the year, makers have experienced their best year in the history of the sale of calcium chloride. Demand during August was somewhat above the various estimates and sales were made in practically every instance at the full market price. The demand will of course drop off early in the current month and continue very limited until the Spring.

Carbon Tetrachloride — The month of August was not marked by any change in conditions. Sales to the cleaning trade were quite brisk and the price was well maintained in all quarters.

Carnauba Wax — Although all grades are lower in price than when last quoted, the market trend is upward. The present position represents a recovery from much lower prices which existed during the first two weeks of last month. Recently there has been increased interest and activity and the market is quite strong at quoted figures.

Casein — Has been rather quiet during the past month and the market has held steady at previously quoted figures of 16c @ 16½c lb.

Chlorine, Liquid — Nothing of any importance occurred during the month. As with many other items, sales during August were very satisfactory to makers and continued good business for the balance of the year is confidently expected.

Copper Sulfate — Is now passing through the quietest period of its year. Sales held up fairly well during the opening weeks of August but slumped noticeably during the closing days. Producers are now going about the production of a surplus stock in anticipation of the annual export demand which should get under way by the first of October and be in full

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
2.80	5.60	4.15	4.69	Fish Scrap, dried, wks.....unit	..... 5.25&10	5.50&10	5.25&10
				Acid, Bulk 7 & 3½% delivered			
2.50	3.50	4.24	3.56½	Norfolk & Balt. basis...unit	..... 4.50&50	4.75&50	4.50&50
.40	1.10	.90	1.01½	Flavine, lemon, 55 lb cases...lb.	1.10 1.15	1.15	1.10
.40	1.10	.85	.89	Orange, 70 lb cases.....lb.	1.10 1.15	1.15	1.10
.....				Flavseed.....lb.			
.....	25.00	25.00	25.00	Fluorspar, 95%, 220 lb bags...lb.	....	.....	.....
.....	.....	.....	.....	Ex-dock.....ton	....	.....	.....
				Formaldehyde, aniline, 100 lb.	..... 25.00	25.00	25.00
.....	.39	.39	.39	drums.....lb.	.39 .42	.42	.39
.08½	.11½	.08½	.10	USP, 400 lb bbls 1c-1 wks...lb.	.08½ .09	.09	.08½
.....	.02½	.02½	.02½	Fossil Flour.....lb.	.02½ .04	.04	.02½
.....	15.00	15.00	15.00	Fullers Earth, bulk, mines...ton	15.00 20.00	20.00	15.00
.....	25.00	25.00	25.00	Imp, powd c-1 bags.....ton	25.00 30.00	30.00	25.00
.....	.17½	.17½	.17½	Furfural, 500 lb drums.....lb.	.17½ .19½	.19½	.17½
1.10	1.69	1.35	1.59	Fusel Oil, 10% impurities....gal.	..... 1.35	1.35	1.35
.01½	.04	.04	.04	Fustic, chips.....lb.	.04 .05	.05	.04
.....	.20	.20	.20	Crystals, 100 lb boxes.....lb	.20 .22	.22	.20
.06	.09	.09	.09	Liquid, 50°, 600 lb bbls....lb.	.09 .10	.10	.09
.08	.20	.20	.20	Solid, 50 lb boxes.....lb.	.20 .23	.23	.20
12.00	30.00	30.00	30.00	Sticks.....ton	30.00 32.00	32.00	30.00
1918	.50	.50	.50	G Salt paste, 360 lb bbls.....lb.	.50 .52	.52	.50
.12	.20	.20	.20	Gall Extract.....lb.	.20 .21	.21	.20
.04½	.08	.06	.....	Gambier, common 200 lb cs...lb.	.08 .09	.09	.08
1917	.12	.12	.12	25% liquid, 450 lb bbls....lb.	.12 .14	.14	.12
.05½	.23	.11	.17	Singapore cubes, 150 lb bg..lb	.11 .12	.12	.11
.....	.45	.30	.43¾	Gelatin, tech, 100 lb cases....lb.	.45 .50	.50	45
.....	3.14	3.14	3.14	Bags, c-1 NY.....100 lb.	3.14 3.24	3.24	3.14
				Glauber's Salt, tech, 250 lb bags			
.60	1.05	1.05	1.05	c-1 wks.....100 lb.	.70 1.05	1.05	.70
				Glucose (grape sugar) dry 70-			
.....	3.24	3.24	3.24	80° bags c-1 NY....100 lb.	3.24 3.34	3.34	3.24
				Tanner's Special, 100 lb bags			
.....	3.14	3.14	3.14	.....100 lb.	..... 3.14	3.14	3.14
.12	.20	.20	.20	Glue, medium white, bbls....lb.	.20 .24	.24	.20
.18	.22	.22	.22	Pure white, bbls.....lb.	.22 .26	.26	.22
.19½	.29	.22	.24	Glycerin, CP, 550 lb drs.....lb.	.15 .15½	.19	.15
.19½	.25	.17	.21½	Dynamite, 100 lb drs.....lb.	.11½ .11½	.15	.11½
.....	.....	.....	.....	Saponification, tanks.....lb.	.08½ .08½	.10½	.08½
.....	.....	.....	.....	Soap Lye, tanks.....lb.	.07½ .07½	.09½	.07½
.....	15.00	15.00	15.00	Graphite, crude, 220 lb bgs..ton	15.00 35.00	35.00	15.00
.....	.05	.05	.05	Flake, 500 lb bbls.....lb.	.06 .09	.09	.06
				Gums			
				Gum Accroides, Red, coarse and			
.....	.03¾	.03¾	.03¾	fine 140-150 lb bags....lb.	.03¾ .04½	.04½	.03¾
.....	.06	.06	.06	Powd, 150 lb bags.....lb.	.06 .06½	.06½	.06
.....	.18	.18	.18	Yellow, 150-200 lb bags..lb.	.18 .20	.20	.18
				Animi (Zanzibar) bean & pea			
.25	.40	.35	.39	250 lb cases.....lb.	.35 .40	.40	.35
.....	.60	.50	.57½	Glassy, 250 lb cases.....lb.	.50 .55	.55	.50
				Asphaltum ,Barbadoes			
.05	.09	.09	.09	(Manjak) 200 lb bags..lb	.09 .12	.12	.09
.15	.15	.15	.15	Egyptian, 200 lb cases.....lb.	.15 .17	.17	.15
				Gilsonite Selects, 200 lb bags			
36.00	55.00	55.00	55.00	.....ton	58.00 65.00	65.00	55.00
				Damar Batavia standard 136,			
.17½	.26½	.26½	.25	lb cases.....lb.	.23 .23½	.23½	.22½
.....	.10½	.07	.10	Batavia Dust, 160 lb bags..lb.	.10½ .11	.11	.10½
.....	.18½	.17½	.18½	E Seeds, 136 lb cases....lb.	.16½ .17	17½	.16
				F Splinters, 136 lb cases and			
.....	.14	.09	.13	bags.....lb.	.13 .13½	14½	.13
.....	.34	.33½	.34	Singapore, No. 1, 224 lb caseslb.	.29½ .30	.30½	.29½
.14	.22½	.21	.22½	No. 2, 224 lb cases.....lb.	.23 .23½	.23½	.20
.08	.14	.11	.12	No. 3, 180 lb bags.....lb.	.13½ .14	.15	.13½
				Benzoin Sumatra, technical, 120			
.34	.35	.30	.30	lb cases.....lb.	... Nom.	.35	.33
				Copal Congo, 112 lb bags, clean			
.....	.14	.12	.13	opaque.....lb.	.14 .15	.15	.14
.12	.08½	.08½	.08½	Dark, amber.....lb.	.08½ .09	.09	.08½
.18	.12½	.12½	.12½	Light, amber.....lb	.12½ .14	.14	.12½
.25	.35	.35	.35	Water white.....lb	.35 .36	.36	.35
				Mastic .....lb.	.60 .62	.62	.58
				Manila, 180-190 lb baskets			
.15	.16	.16	.16	Loba A.....lb.	.16 .16½	.16½	.16
.....	.15	.15	.15	Loba B.....lb.	.15 .15½	.15½	.15
.....	.14½	.13	.13¾	Loba C.....lb.	.13 .13½	.13½	.13
.....	.16	.16	.16	Pale bold, 224 lb cs.....lb.	.16 .18	.18	16
.08½	.14	.12	.13	Pale nubs.....lb	.12 .12½	.12½	.12
.....	.07½	.07½	.07½	East Indies chips, 180lb bagslb.	.08 .08½	.08½	.07½
.....	.....	.....	.....	Pale bold, 180 lb bags.. .lb.	.17½ .18	.18	.17
.....	.17	.17	.17	Pale nubs.....lb.	.14 .14½	.14½	.14
.....	.....	.....	.....	Pontianak, 224 lb cases....lb.			
.13½	.29	.25	.26½	Pale bold gen No. 1.....lb.	.25 .25½	.25½	.25
.07	.19	.13	.15½	Pale gen chips spot.....lb.	.13 .14½	.14½	.13
.....	.14	.13	.13¾	Elemi, No. 1, 80-85 lb cs...lb.	.13½ .14	.14	.13
.....	.13	.12	.12½	No. 2, 80-85 lb cases.....lb.	.13 .13½	.13½	.13
.....	.13	.11	.11	No. 3, 80-85 lb cases.....lb.	.12 .13	.13	.12
				Kauri, 224-226 lb cases No. 1			
.50	.67½	.57	.63½	.....lb.	.50 .57	.57	.50
.32	.44½	.38	.41	No. 2 fair pale.....lb.	.35 .38	.38	.35
				Brown Chips, 224-226 lb			
.07½	.14½	.10	.12	cases.....lb.	.10 .12	.12	.10
.....	.42	.38	.40	Bush Chips, 224-226 lb			
				cases.....lb.	.38 .40	.40	.38
				Pale Chips, 224-226 lb cases			
.....	.31½	.24½	.25	.....lb.	.24½ .26	.26	.24½
				Sandarac, prime quality, 200			
.19	.27	.25	.25	lb bags & 300 lb casks...lb.	.30 .32	.32	.26
1917	.12	.12	.12	Hematine crystals, 400 lb bbls.lb.	.17 .20	.20	.17
1917	.09	.09	.09	Paste, 500 bbls.....lb	..... .11	.11	.11
.02¾	.03½	.03½	.03½	Hemlock 25%, 600 lb bbls wks lb.	.03½ .03¾	.03¾	.03½
.....	16.00	16.00	16.00	Bark.....ton	..... 16.00	16.00	16.00
.....	.60	.45	.56	Hexalene, 50 gal drs wks.....lb.	..... .60	.60	.60
.....	.80	.62	.72	Hexamethylenetetramine, drs.lb.	.62 .65	.65	.62
2.60	3.35	2.75	3.08	Hoof Meal, fob Chicago.....unit	..... 4.00	4.00	4.00

DU PONT
REG. U. S. PAT. OFF.

ORGANIC CHEMICALS
for
Industrial Purposes

DYESTUFF INTERMEDIATES—After more than ten years experience in the manufacture of Intermediates and Dyestuffs we have accumulated a fund of knowledge and technical skill that enables us to guarantee our products to conform with your most exacting quality standards. Our own large consumption requirements of these products is your assurance of uniformity of product and constant availability of stocks.

RESISTO FILTERS—Every manufacturer of chemicals involving filtrations from corrosive acid solutions is confronted with the problem of premature failure of ordinary filter cloths under such severe operating conditions. RESISTO FILTERS will give many more filtrations per cloth which means a large saving to you in filter press operation and maintenance.

RUBBER ACCELERATORS—Realizing that no single accelerator is suitable for every rubber compound or adaptable to all manufacturing processes, we have developed and offer a wide variety of organic accelerators that enable us to recommend a product for practically every type of rubber compound and condition of cure. We also maintain a service laboratory to furnish technical assistance on any rubber compounding or manufacturing problem.

ANTIOXIDANTS FOR RUBBER—Since oxygen is recognized as rubber's worst enemy we have devoted considerable effort to the development of antioxidants for use in the manufacture of practically all classes of rubber goods. Our experienced rubber compounders will gladly revise your present recipes to include these chemicals that mean longer life for rubber goods.

RUBBER COLORS—The establishment of a synthetic dyestuffs industry in the United States is probably the greatest achievement in the post-war development of chemical manufacture. Among the hundreds of organic dyestuffs we manufacture is a complete range of colors for rubber that satisfy nearly every specific need of the manufacturer of colored articles.

E. I. DU PONT DE NEMOURS & COMPANY, INCORPORATED
Dyestuffs Department, Sales Division, Wilmington, Delaware

Branch Offices:
Boston, Mass. 274 Franklin St.
Chicago, Ill. 1114 Union Trust Bldg.
New York, N. Y. 8 Thomas St.
San Francisco, Cal. 351 California St.

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

swing a month later. No change in the price of $5.30 100 lbs. in carlots has been made.

Dextrin — Easier conditions and lower prices in the raw material market, combined with a slackening of demand, has lead to a 15c per 100 lb. reduction in the price of corn dextrin during the past month. This represents the first sign of a downward price trend for over six months, during which time the movement has been constantly upward.

Diethylene Glycol — Mono ethyl ether grade has been advanced in price by producers, effective September 1, and the new schedule of prices is at 13c lb. in carlots; 14c lb. in less carlots and 15c lb. in single drums, f. o. b. works. No change has been made in mono butyl ether.

Diphenylguanidine — Since the drastic reduction in price following the invalidating of patents, sales have been quite good in all quarters at the openly quoted market price.

Egg Yolk — Is also involved in the cost-of-production investigation which is discussed above in the report on albumen. Is somewhat lower in price than when last reported, now being quoted at 74c @ 77c lb.

Ethyl Acetate — Based on the higher position of the alcohol market and the approach of a good consuming season the market has advanced over the month and is now very firm at 87c gal. in tanks and 89c gal. in carlots. Consuming interest is very good and no change from the present firm position is looked for.

Fish Scrap — As increased supplies have become available, prices have declined. Dried at the works is now quoted at $5.25 and 10 per unit, while acid is at $4.50 and 50 per unit. Demand has been only fair.

Formaldehyde — Large quantities were moved during the month just past and the market level of 8½c @ 9¼c lb. is maintained in all directions.

Glauber Salts — Has not changed from the very routine position which has marked this item since the New England and Metropolitan markets have been heavy with stocks. It is undoubtedly a buyers market and the latter are taking advantage of the situation with the little business that is passing.

Glycerin — The spot market for dynamite grade showed an easier tendency during the month in the face of a listless consuming interest. Current quotations are at 11½c @ 11¾c lb. and at these levels little buying is in evidence. Imports of this grade have fallen sharply based on the figures of 2,000,000 pounds for the first five months or less than 5,000,000

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
.....	3.90	3.00	3.57	South Amer. to arrive....unit	.....	.....	.....	.....
.....	.30	.22	.24	Hydrogen Peroxide, 100 vol, 140 lb cbys.....lb.	.24	.26	.26	.24
1917	.12	.12	.12	Hpyernic, 51°, 600 lb bbls....lb.	.12	.15	.15	.12
.58	1.28	1.20	1.27	Indigo Madras, bbls.....lb.	1.28	1.30	1.30	1.28
.....	.14	.14	.14	20% paste, drums.....lb.	.14	.15	.15	.14
.....	.07½	.07½	.07½	Solid, powder.....lb.	.07½	.08	.08	.07½
				Iron Chloride, see Ferric or Ferrous				
.04	.09	.09	.09	Iron Nitrate, kegs.....lb.	.09	.10	.10	.09
1.12½	2.50	2.50	2.50	Coml, bbls.....100 lb.	2.50	3.25	3.25	2.50
.....	.10	.10	.10	Oxide, English.....lb.	.10	.12	.12	.10
.....	.02½	.02½	.02½	Red, Spanish.....lb.	.02½	.03½	.03½	.02½
.....	.85	.85	.85	Isopropyl Acetate, 50 gal drs..gal.	.85	.90	.90	.85
.11½	.29	.17	.19	Japan Wax, 224 lb cases.....lb.	.17½	.18	.19	.17
.....	60.00	60.00	60.00	Kieselguhr, 95 lb bgs NY....ton	60.00	70.00	70.00	60.00
.....	14.00	13.00	13.33	Lead Acetate, bbls wks...100 lb.				
9.12½	14.00	13.00	13.33	White crystals, 500 lb bbls wks.....100 lb.	13.00	13.50	13.50	13.00
.04½	.15½	.13½	.13	Arsenate, drs 1c-1 wks.....lb.	.13	.15	.15	.13
3.90	7.80	6.20	6.78	Metal, c-1 NY.....100 lb.	.....	6.10	6.25	6.25
.07½	.14	.14	.14	Nitrate, 500 lb bbls wks....lb.	.....	.14	.14	.14
.17½	.17½	.17½	.17½	Oleate, bbls.....lb.	.17½	.18	.18	.17½
.....	.10½	.08½	.09	Oxide Litharge, 500 lb bbls..lb.	.....	.08½	.08½	.08½
.05½	.11½	.09½	.10	Red, 500 lb bbls wks.....lb.	.....	.09½	.09½	09½
.05½	.09½	.09	.09½	White, 500 lb bbls wks...lb.	.....	.09	.09	.09
.05	.09	.08½	.08½	Sulfate, 500 lb bbls wk...lb.	.....	.08½	.08½	.08½
.....	4.50	4.50	4.50	Lime, ground stone bags....ton	.....	4.50	4.50	4.50
.....	1.05	1 05	1.05	Live, 325 lb bbls wks..100 lb.	.....	1.05	1.05	1.05
				Lime Salts, see Calcium Salts				
1918	.15	.15	.15	Lime-Sulfur soln bbls.....gal.	.15	.17	.17	.15
.03½	.06½	.06½	.06½	Lithopone, 400 lb bbls 1c-1 wks .....lb.	.....	.06½	.06½	.06½
.05	.08½	.08½	.08½	Logwood, 51°, 600 lb bbls.....lb.	.08½	.08½	.08½	.08½
.01½	.03	.03	.03	Chips, 150 lb bags.....lb.	.03	.03½	.03½	.03
.06	.12	.12	.12	Solid, 50 lb boxes.....lb.	.....	.12½	.12½	.12½
15.00	26.00	26.00	26.00	Sticks.....ton	26.00	27.00	27.00	26.00
.....	.07½	.07½	.07½	Lower grades.....lb.	.07½	.08	.08	.07½
.12	.30	.30	.30	Madder, Dutch.....lb.¾	.....	.30	.30	.30
30.00	48.00	48 00	48.00	Magnesite, calc, 500 lb bbl..ton	48.00	50.00	50.00	48.00

Magnesium

1918	.06½	.06	.06	Magnesium Carb, tech, 70 lb bags NY.....lb.	.06	.06½	.06½	.06
.....	37.00	37.00	37.00	Chloride flake, 375 lb drs c-1 wks.....ton	.....	37.00	37.00	37.00
.....	33.00	33.00	33.00	Imported shipment....ton	.....	33.00	33.00	33.00
.....	31.00	31.00	31.00	Fused, imp, 900 lb bbls NY ton	.....	31.00	31.00	31.00
.....	.10	.10	.10	Fluosilicate, crys, 400 lb bbls wks.....lb.	.10	.10½	.10½	.10
.....	.42	.42	.42	Oxide, USP, light, 100 lb bbls .....lb.	.....	.42	.42	.42
.....	.50	.50	50	Heavy, 250 lb bbls.....lb.	.....	.50	.50	.50
.....	.12½	.09½	.11½	Silicofluoride, bbls.....lb.	.09½	.10½	.10½	.09½
.....	.23	.23	.23	Stearate, bbls.....lb.	.23	.25	.25	.23
.20	.24	.24	.24	Manganese Borate, 30%, 200 lb bbls.....lb.	.....	.24	.24	.24
.06	.08	.08	.08	Chloride, 600 lb casks.....lb.	.08	.08½	.08½	.08
.....	.05	.04½	.04½	Dioxide, tech (peroxide) drs.lb.				
				Ore, powdered or granular	.35	.40	.50	.35
.....	.03	.03	.03	75-80%, bbls.....lb.	.03	.03½	.03½	.03
.....	.04	.04	.04	80-85%, bbls.....lb.	.04	.04½	.04½	.04
.....	.05	.05	.05	85-88%, bbls.....lb.	.05	.05½	.05½	.05
.....	.07	.07	.07	Sulfate, 550 lb drs NY.....lb.	.07	.07½	.07½	.07
.....	.03½	.03½	.03½	Mangrove 55%, 400 lb bbls...lb.	.03½	Nom.	Nom.	.03½
.....	39.00	34.00	37.54	Bark, African.....ton	.....	38.00	45.00	38.00
8.00	10.00	10.00	10.00	Marble Flour, bulk.....ton	10.00	12.00	12.00	10.00
1916	129.00	99.00	119.09	Mercury metal.....75 lb flask	128.00	130.00	128.00	121.00
1918	.72	.72	.72	Meta-nitro-aniline .....lb.	.72	.74	.74	.72
1918	1.70	1.70	1.70	Meta-nitro-para-toluidine 200 lb bbls.....lb.	1.70	1.80	1.80	1.70
1918	.90	.90	.90	Meta-phenylene-diamine 300 lb bbls.....lb.	.90	.94	.94	.90
1918	.72	.72	.72	Meta-toluene-diamine, 300 lb bbls.....lb.	.72	.74	.74	.72
.4	.....	.....	.....	Methanol, (Wood Alcohol), drs				
.45	.80	.55	.69	95%.....gal.	.46	.50	.55	.46
.50	.87	.57	.74½	97%, drums c-1.....gal.	.47	.50	.57	.47
.....	.....	.....	.....	Pure, drums 1c-1.....gal.	.44	.48	.58	.44
.....	.....	.....	.....	Synthetic, drums c-1.....gal.	.48	.50	58	.48
.....	.80	.75	.78	Denat. grd. tanks.....gal.	.50	.55	.75	.45
.....	.95	.95	.95	Methyl Acetate, drums.....gal.	.....	.95	.95	.95
.....	.88	.75	.66	Acetone, 100 gal drums...gal.	.82	.84	.82	.68
.....	1.00	.85	.92½	Anthraquinone, kegs.....lb.	.85	.95	.95	.85
.....	.55	.55	.55	Chloride, 90 lb cyl.....gal.	.55	.60	.60	.55
.....	.03½	.03½	.03½	Mica, dry grd. bags wks.....lb.	65.00	80.00	80.00	65.00
.....	.05½	.05½	.05½	Wet, ground, bags wks.....lb.	110.00	115.00	115.00	110.00
.....	3.00	3.00	3.00	Michler's Ketone, kegs.....lb.	....	3.00	....	....
				Monochlorobenzene, drums see, Chlorobenzene, mono.....lb.				
.....	.70	.70	.70	Monoethylorthotoluidin, drs..lb.	.70	.75	.75	.70
1918	1.05	1.05	1.05	Monomethylaniline, 900 lb dr .....lb.	.....	1.05	1.05	1.05
.....	3.95	3.95	3.95	Monomethylparaminosulfate 100 lb drums.....lb.	3.95	4.20	4.20	3.95
.06½	.06½	.06½	.06½	Montan Wax, crude, bags....lb.	.06½	.07	.07	.06½
.....	.04	.04	.04	Myrobalans 25%, liq bbls.....lb.	.04½	.04½	.04½	.04½
.....	.08	.08	.08	50% Solid, 50 lb boxes.....lb.	.08	.08½	.08½	.08
27.00	43.50	41.00	42.00	J 1 bags.....ton	44.00	45.50	50.00	42.50
27.00	37.00	23.50	35.24	J 2 bags.....ton	.....	35.00	40.00	34.50
27.00	37.00	30.00	36.62	R 2 bags.....ton	.....	35.00	40.00	34.50
.10	.21	.18	.19½	Naphtha, v. m. & p. (deodorized) bbls.....gal	.....	.18	.18	.18

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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

pounds for the year, as compared with 23,000,000 pounds imported during 1927. Chemically pure seems in a bit better position with sales reports late in the month at 15c lb. in bulk.

Gums — A decided upward trend is apparent in this market. Demand is increasing while spot supplies are at a low ebb. Consumers have evidently expected that dealers were carying stocks, but such is not the case. Dammar, East Indies and Sandarac are three grades which have advanced in price during the past month. The entire market is strong, however, and higher prices seem quite likely.

Mangrove Bark — Is lower in price, being quoted at $38 per ton.

Mercury — Based on the announcement of a Spanish-Italian selling syndicate which will begin operations October 1, the market has shown several rapid spurts during the month until it is now quoted at $128.00 @ $129.00 flask on spot. Further advances seem likely in view of higher cables from abroad, indicating prices of well over $130.00 flask for future deliveries. Sales are fairly good as consumers are not unused to paying the current levels for mercury. In one direction it is reported that a bid of $128.00 flask for 100 flasks was rejected by the seller within the last week.

Methanol — The market is very firm. In contrast to the position of a few months ago, buyers are now willing to talk business with the result that producers are having no trouble in securing their asking price in any sized quantities.

Methyl Acetone — In common with other items in the group the market is very firm and advancing. Most recent quotations are on the basis of 83c gal. in carlots with the possibility of further advances not unlikely in the not distant future. Buyers seem convinced that the market is basically firm, for orders are noted in all directions in good volume.

Myrobolans — J1 has remained unchanged since last reported, but J2 and R2 are lower, now being quoted at $35.00 per ton.

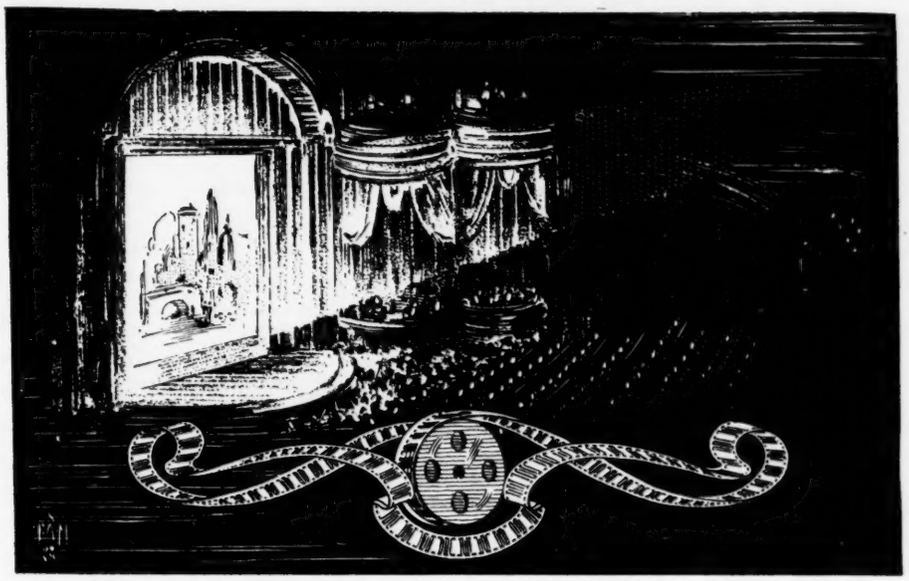
Nitrogenous Material — In common with most of the fertilizer group, has eased off somewhat during the past month and is now quoted at $3.85 per unit.

Phthalic Anhydride — Leading sellers report that all stocks are entirely disposed of and that they are not anxious to book business ahead. Prices are unchanged for the month, but the market is firm in all directions.

Potash Caustic — Despite rumors of an advance in price the month passed by without any action in this direction, and

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
				Naphthalene balls, 250 lb bbls			
.02¾	.06	.05½	.05¾	wks.....lb.	.....	.05½	.06	.05½
.....	.04½	.04½	.04½	Crushed, chipped bgs wks..lb.	.....	.04½	.04½	.04½
.02¾	.05	.04½	.04¾	Flakes, 175 lb bbls wks.....lb.	.....	.05	.05	.05
.....	.21	.21	.21	Nickel Chloride, bbls kegs....lb.	.21	.24	.24	.21
1918	.35	.35	.35	Oxide, 100 lb kegs NY.....lb.	.35	.38	.38	.35
1918	.09	.08½	.08¾	Salt dbl, 400 lb bbls NY....lb.	.09	.09¼	.09¼	.09
1918	.08¾	.08	.08¼	Single, 400 lb bbls NY.....lb.	.08¾	.09	.09	.08¾
				Nicotine, free 40%, 8 lb tins,				
.....	1.25	1.10	1.24	cases.....lb.	1.25	1.30	1.30	1.25
.....	1.10	1.10	1.10	Sulfate, 10 lb tins.....lb.	1.10	1.15	1.15	1.10
.....	13.00	13.00	13.00	Nitre Cake, 500 lb bbls.....ton	13.00	14.00	14.00	13.00
				Nitrobenzene, redistilled, 1000				
.06½	.10½	.09¼	.09¼	lb drs wks.....lb.	.10½	.10½	.10½	.10½
				Nitrocellulose, regular drums				
.....	.40	.40	.40	wks.....lb.	.40	Nom.	Nom.	.40
				Low viscosity (soln only)				
.....	.55	.55	.55	Grade 1 drums, wks.....lb.	.55	Nom.	Nom.	.55
.....	.50	.50	.50	Grade 2 drums, wks.....lb.	.50	Nom.	Nom.	.50
3.05	3.60	3.35	3.53	Nitrogenous Material, bulk..unit	.....	3.85	4.00	3.35
1918	.25	.25	.25	Nitronaphthalene, 550 lb bbls.lb.	.....	.25	.25	.25
1918	.14	.14	.14	Nitrotoluene, 1000 lb drs wks.lb.	.14	.15	.15	.14
.16	.25	.25	.25	Nutgalls Aleppy, bags.....lb.	.25	Nom.	Nom.	.25
.15	.17	.17	.17	Chinese, bags.....lb	.17	.18	.18	.17
.....	.22	.22	.22	Powdered, bags.....lb	.22	.24	.24	.22
.08	.03½	.03½	.03½	Oak, tanks, wks.....lb	....	.03½	.03½	.03½
.08	.04	.04	.04	23-25% liq., 600 lb bbl wk .lb.	.04	.04½	.04½	.04
.....	45.00	45.00	45.00	Oak Bark, ground.....ton	45.00	50.00	50.00	45.00
.....	20.00	20.00	20.00	Whole.....ton	20.00	23.00	23.00	20.00
				Orange-Mineral, 1100 lb casks				
.07½	.14½	.13	.13½	NY.....lb.	.11½	12½	.13½	.13
.....	2.20	2.20	2.20	Orthoaminophenol, 50 lb kgs..lb.	2.20	2.25	2.25	2.20
.....	2.50	2.35	2.36½	Orthoanisidine, 100 lb drs....lb.	2.35	2.50	2.50	2.35
.....	.50	.50	.50	Orthochlorophenol, drums....lb.	.50	.65	.65	.50
.....	.18	.18	.18	Orthocresol, drums.....lb.	.18	.28	.28	.18
				Orthodichlorobenzene, 1000 lb				
1918	.06	.06	.06	drums.....lb	.06	.07	.07	.06
				Orthonitrochlorobenzene, 1200				
1918	.32	.32	.32	lb drs wks.....lb.	.32	.35	.35	.32
				Orthonitrotoluene, 1000 lb drs				
1918	.13	.13	.13	wks.....lb.	.17	.18	.18	.17
1918	.85	.85	.85	Orthonitrophenol, 350 lb dr...lb.	.85	.90	.90	.85
1918	.29	.25	.28	Orthotoluidine, 350 lb bbl 1c-1.lb.	.29	.31	.31	.29
				Orthonitroparachlorphenol, tins				
1918	.70	.70	.70	.....lb.	.70	.75	.75	.70
.....	.16	.16	.16	Osage Orange, crystals.....lb.	.16	.17	.17	.16
1918	.07	.07	.07	51 deg. liquid.....lb.	.07	.07½	.07	.07
.....	.14½	.14½	.14½	Powdered, 100 lb bags.....lb.	.14½	.15	.15	.14½
				Paraffin, refd, 200 lb cs slabs				
.04¾	.06½	.06½	.06½	123-127 deg. M. P.....lb.	.06½	.06¾	.06¾	.06½
.05¾	.07½	.07½	.07½	128-132 deg. M.P.....lb.	.07½	.07¾	.07¾	.07½
.06¾	.08	.08	.08	133-137 deg. M.P.....lb.	.08	.08½	.08½	.08
1918	.08¾	.08¾	.08¾	138-140 deg. M.P.....lb.	.08¾	.10	.10	.08¾
.....	.29	.26	.26¼	Para Aldehyde, 110-55 gal drs.lb.	.20½	.23	.28	.20½
1918	1.00	1.00	1.00	Aminoacetanilid, 100 lb bg.lb.	1.00	1.05	1.05	1.00
				Aminohydrochloride, 100 lb kegs				
.....	1.25	1.25	1.25	.....lb.	1.25	1.30	1.30	1.25
.....	.15	.15	.15	Aminophenol, 100 lb kegs...lb.	.....	1.15	1.15	1.15
.....	.50	.50	.50	Chlorophenol, drums.....lb.	.50	.65	.65	.50
.....	.12	.12	.12	Coumarone, 330 lb drums..lb.	.....	.....	.....	.....
.....	2.25	2.25	2.25	Cymene, refd, 110 gal dr...gal.	2.25	2.50	2.50	2.25
				Dichlorobenzene, 150 lb bbls				
1918	.17	.17	.17	wks.....lb.	.17	.20	.20	.17
1918	.53	.50	.50½	Nitroacetanilid, 300 lb bbls.lb.	.50	.55	.55	.50
				Nitroaniline, 300 lb bbls wks				
1917	.52	.52	.52	.....lb.	.48	.49	.49	.48
				Nitrochlorobenzene, 1200 lb drs				
.....	.32	.32	.32	wks.....lb.	.....	.32	.32	.32
				Nitro-orthotoluidine, 300 lb				
1918	2.75	2.75	2.75	bbls.....lb.	2.75	2.85	2.85	2.75
1918	.50	.50	.50	Nitrophenol, 185 lb bbls....lb.	.50	.55	.55	.50
				Nitrosodimethylaniline, 120 lb				
.....	.92	.92	.92	bbls.....lb.	.92	.94	.94	.92
1918	.30	.25	.26	Nitrotoluene, 350 lb bbls...lb.	.....	.30	.30	.30
				Phenylenediamine, 350 lb bbls				
1918	1.20	1.15	1.18	.....lb.	1.15	1.20	1.20	1.15
				Toluenesulfonamide, 175 lb				
.....	.40	.40	.40	bbls.....lb.	.40	.41	.41	.40
				Toluenesulfonchloride, 410 lb				
.....	.20	.18	.19	bbls wks.....lb.	.20	.22	.22	.20
1918	.45	.38	.41	Toluidine, 350 lb bbls wk...lb.	.40	.42	.42	.40
				Paris Green, Arsenic Basis				
.11	.21	.21	.21	100 lb kegs.....lb.	.....	.25	.25	.20
.....	.19	.19	.19	250 lb kegs.....lb.	.....	.23	.23	.17
.12	.25	.25	.25	Persian Berry Ext., bbls.....lb.	.....	.....	.....	.....
.....	.02½	.02½	.02½	Petrolatum, Green, 300 lb bbl.lb.	.02½	.03	.03	.02½
1918	.18	.16	.17	Phenol, 250-100 lb drums.....lb.	.13	.20	.13	.20
				Phenyl - Alpha - Naphthylamine,				
1918	1.35	1.28	1.35	100 lb kegs.....lb.	.....	1.35	1.35	1.35
45.00	9.00	8.50	8.75	Phosphate Acid, 16% blk wks.ton	.....	10.10	10.10	9.00
				Phosphate Rock, f.o.b. mines	.....	.....	.....	.....
3.00	3.00	3.00	3.00	Florida Pebble, 68% basis..ton	3.00	3.15	3.15	3.00
2.00	3.50	3.50	3.50	70% basis.....ton	3.50	3.65	3.65	3.50
.....	4.00	3.85	3.96	72% basis.....ton	4.00	4.15	4.15	4.00
4.00	5.35	5.00	5.09	75-74% basis.....ton	.....	5.00	5.00	5.00
4.00	5.75	5.60	5.71¼	75% basis.....ton	.....	5.75	5.75	5.75
5.75	6.25	6.00	6.19	77-76% basis.....ton	.....	6.25	6.25	6.25
4.50	5.50	5.00	5.12½	Tennessee, 72% basis.....ton	.....	5.00	5.00	5.00
				Phosphorous Oxychloride 175 lb				
.....	.35	.35	.35	cyl.....lb.	.35	.40	.40	.35
.45	.65	.60	.62	Red, 110 lb cases.....lb.	.60	.65	.65	.60
35	.32	.32	.32	Yellow, 110 lb cases wks.lb.	.....	.32	.32	.32
.	.46	.46	.46	Sesquisulfide, 100 lb cs.....lb.	.....	.46	.46	.46
....	.35	.35	.35	Trichloride, cylinders.....lb.	.....	.....	.....	.....
				Phthalic Anhydride, 100 lb bbls				
.....	.18	.18	.18	wks.....lb.	.18	.20	.20	.18

ALCOHOL THROUGH THE AGES NUMBER XXVI



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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

on a normal consuming demand the market remained unchanged from all angles.

Potash Chlorate — In spite of the sharp drop in the domestic price to 6½c lb. in carlots in this territory late in July, imports continue in good sized volumes. The importers have not given any indication of meeting domestic prices and it will be interesting to note just how much the domestic makers will cut into the imports business at the present line up of prices. Imported is openly quoted at 7½c lb.

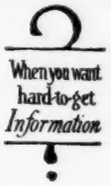
Rosins — Heavy receipts and poor demand have combined to lower prices considerably on all grades during the past month. Prices are 80c @ 95c per unit lower than when last reported. However, the naval stores industry witnessed great activity in all lines during the past season, ended March 31, 1928, according to the Department of Agriculture. The principal manufacturing industries using turpentine and rosin in their processes consumed 5,838,298 gallons of turpentine, 906,951 barrels of rosin, and 59,168,760 gallons of mineral oil thinners during the calendar year 1927. This was an increase over the consumption in 1926 of approximately 221,000 gallons of turpentine, and a decrease in the consumption of rosin from the 984,085 barrels consumed in 1926. Data obtained from the Department of Commerce show an increase also in the exports of turpentine and rosin during the past naval stores season. These exports amounted to 16,494,551 gallons of turpentine and 1,373,411 barrels of rosin, the greatest exportation of these products from the United States since the season of 1913-14.

Shellac — All grades are lower in price than when last reported, and are said to be firmer at the lower prices. The market during the past month, however, has been characterized by unsteadiness. Bone dry is now at 58½c lb., garnet at 45c @ 46c lb., superfine at 48c lb., and T. N. at 45c lb.

Soda Chlorate — The movement into the agricultural areas continued unabated during the month of August and sellers say they are having quite a task in keeping up with this increasing demand from a new quarter. This demand is expected to drop off within the next few weeks, but in the meanwhile a very brisk business is being consummated. The market is firm at 5¾c @ 6¼c lb. as to quantity and position.

Sodium Nitrate — Although all but the one American producer have formed a centralized sales organization, it is not thought that prices here will be effected. The market continues rather quiet and unchanged at the current prices of $2.12½ per 100 lbs. for September, $2.17½ per

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.....	40.00	37.00	38 50	Pigments Metallic, Red or brown bags, bbls, Pa. wks....ton	37.00	45.00	45.00	37.00
1918	.63	.63	.63	Pine Oil, 55 gal drums or bbls Destructive dist.....lb.	.63	.64	.64	.63
.....	8.00	8.00	8.00	Prime bbls.....bbl.	8.00	10.60	10.60	8.00
.34	.70	.66	.69	Steam dist. bbls.....gal.	.....	.70	.70	.70
37.50	40.00	40.00	40.00	Pitch Hardwood, ... wks.....ton	40.00	45.00	45.00	40.00
1.50	3.30	3.30	3.30	Plaster Paris, tech, 250 lb bbls .....bbl.	.....	3.30	3.30	3.30
				Potash				
.04½	.07½	.07½	.07½	Potash, Caustic, wks.....lb.	.....	.07½	.07½	.07½
.....	.07½	.07½	.07½	Imported casks c-l.....lb.	.....	.07½	.07½	.07½
8.36	9.00	9.00	9.00	Potash Salts, Rough Kainit 12.4% basis bulk.....ton	.....	9.00	9.00	9.00
.....	9.50	9.50	9.50	14% basis.....ton	.....	9.50	9.50	9.50
13.58	12.40	12.40	12.40	Manure Salts..... 20% basis bulk.....ton	.....	12.40	12.40	12.40
.....	18.75	18.75	18.75	30% basis bulk .....ton	.....	18.75	18.75	18.75
39.07	36.40	36.40	36.40	Potassium Muriate, 80% basis bags.....ton	.....	36.40	36.40	36.40
25.04	27.00	27.00	27.00	Pot. & Mag. Sulfate, 40% basis bags.....ton	.....	27.00	27.00	27.00
47.57	47 30	47.30	47.30	Potassium Sulfate, 90% basis bags.....ton	.....	47.30	47.30	47.30
.08	.09	.09	.09	Potassium Bicarbonate, USP, 320 lb bbls.....lb.	.09	.09½	.09½	.09
.06½	.08½	.08	.08½	Bichromate Crystals, 725 lb casks.....lb.	.09	.09½	.09½	.08½
.....	.12	.11	.11	Powd., 725 lb cks wks....lb.	.12½	.13	.12½	.12
.....	.16	.16	.16	Binoxiate, 300 lb bbls.....lb..	.16	.17	.17	.16
.....	.30	.30	.30	Bisulfate, 100 lb kegs.....lb.	.....	.30	.30	.30
.03½	.05½	.05½	.05½	Carbonate, 80-85% calc. 800 lb casks.....lb.	.05½	.05½	.05½	.05½
.07½	.08½	.08½	.08½	Chlorate crystals, powder 112 lb keg wks.....lb.	.06½	.09	.09	.06½
.....	.08½	.08½	.08½	Potassium Chlorate, Imp 112 lb kegs NY.....lb.	.07½	.08½	.08½	.07½
	.05	.05	.05	Chloride, crys bbls.....lb.	.05½	.05½	.05½	.05½
.....	.27	.27	.27	Chromate, kegs.....lb.	.27	.28	.28	.27
.20	.55	.55	.55	Cyanide, 110 lb. cases.....lb.	.55	.57½	.57½	.55
.13	.11½	.11½	.11½	Metabisulfite, 300 lb. bbl..lb.	.11½	.12	.12	.11½
.14	.16	.16	.16	Oxa ate. Neut. 225 lb. bbls.lb.	.16	17	.17	.16
.....	.11	.11	.11	Perchlorate, casks wks.....lb.	.11	.12	.12	.11
.09½	.15½	.14½	.14½	Permanganate, USP, crys 500 & 100 lb drs wks.....lb.	.15	.15½	.15½	.15
.21	.39	.37½	.38	Prussiate, red, 112 lb keg...lb.	.37	.38	.38	.37
.12½	.18	.18	.18	Yellow, 500 lb casks.....lb.	.18	.18½	.18½	.18
.....	.51	.51	.51	Tartrate Neut, 100 lb keg...lb.	.....	.51	.51	.51
.....	.25	.25	.25	Titanium Oxalate, 200 lb bbls .....lb.	.....	.25	.25	25
.....	.04	.04	.04	Pumice Stone, lump bags.....lb.	.04	.05	.05	.04
.04½	.04½	.04½	.04½	250 lb bbls.....lb.	.04½	.06	.06	.04½
.01½	.02½	.02½	.02½	Powdered, 350 lb bags.....lb.	.02½	.03	.03	.02½
2.65	3.75	3.75	3.75	Putty, commercial, tubs..100 lb.	.....	.03½	.03½	.03½
4.25	5.50	5.50	5.50	Linseed Oil, kegs.....100 lb.	.....	.05½	.05½	.05½
.....	3.00	1.50	.94	Pyridine, 50 gal drums.....gal.	.....	1.50	1.50	1.50
.10½	.13	.12	.12½	Pyrites, Spanish cif Atlantic ports bulk.....unit	.13	.13½	.13½	.13
.02½	.03	.03	.03	Quebracho, 35% liquid tks....lb.	.03	.03½	.03½	.03
.....	.03½	.03½	.03½	450 lb bbls c-1.....lb.	.03½	.04	.04	.03½
.....	.04	.04	.04	35% Bleaching, 450 lb bbl..lb.	.04	.05	.05	.04
.04½	.05	.04½	.04½	Solid, 63%, 100 lb bales cif.lb.	.05½	.05½	.05½	.05
.....	.05	.05	.05	Clarified, 64%, bales.....lb.	.....	.05½	.05½	.05
.01½	.06½	.06½	.06½	Quercitron, 51 deg liquid 450 lb bbls.....lb.	.05½	.06	.06	.05½
.02½	.10	.10	.10	Solid, 100 lb boxes.....lb.	.10	.13	.13	.10
22.00	14.00	14.00	14.00	Bark, Rough.....ton	.....	14.00	14.00	14.00
.....	34.00	34.00	34.00	Ground.....ton	34.00	35.00	35.00	34.00
1918	.45	.45	.45	R Salt, 250 lb bbls wks.....lb.	.45	.46	.46	.45
.03	.18	.18	.18	Red Sanders Wood, grd bbls..lb.	.....	.....	.....	.....
1918	1.25	1.25	1.25	Resorcinol Tech, cans.....lb.	1.25	1.35	1.35	1.25
.27	.67	.57	.59	Rosin Oil, 50 gal bbls, first run .....gal.	.....	.57	.57	.57
.38	.72	.62	.64	Second run.....gal.	.....	.62	.62	.62
4.37½	13.00	8.50	10.08½	Rosins, 600 lb bbls 280 lb...unit B.....	.....	8.75	9.75	8.20
4.42½	13.00	8.50	10.17	D.....	.....	8.75	9.80	8.25
4.42½	13.15	8.50	10.23	E.....	.....	8.80	9.95	8.60
4.47½	13.20	8.50	10.49	F.....	.....	8.80	10.10	8.65
4.47½	13.25	8.50	10.58½	G.....	.....	8.85	10.10	8.75
4.47½	13.30	8.50	10.65	H.....	.....	8.85	10.10	8.75
4.55	13.35	8.55	10.79½	I.....	.....	8.90	10.15	8.80
4.49½	14.80	8.65	11.05	K.....	.....	8.90	10.15	8.85
5.47½	15.00	8.80	11.15½	M.....	.....	8.95	10.30	8.85
6.12½	15.85	9.15	11.62	N.....	.....	9.15	11.00	9.15
6.67½	16.60	10.50	12.58	WG.....	.....	10.15	11.65	10.15
6.92½	18.55	12 00	14.34	WW.....	.....	10.40	12.65	10.40
.....	24.00	24.00	24.00	Rotten Stone, bags mines....ton	24.00	30.00	30.00	24.00
.....	.07	.07	.07	Lump, imported, bbls. ....lb.	.07	.08	.08	.07
.05½	.09	.09	.09	Selected bbls.....lb.	.09	.12	.12	.09
.02½	.02	.02	.02	Powdered, bbls.....lb.	.02	.05	.05	.02
.02½	.04½	.04½	.04½	Sago Flour, 150 lb bags.....lb.	.04½	.05	.05	.04½
.60	.90	.90	.90	Sal Soda, bbls wks.....100 lb.	.....	.....	.....	.....
11.00	19.00	19.00	19.00	Salt Cake, 94-96% c-1 wks...ton	19.00	20.00	20.00	19.00
8.00	15.00	15.00	15.00	White, 87% wks.....ton	15.00	17.00	17.00	15.00
.04½	.06½	.06½	.06½	Saltpetre, double refd granular 450-500 lb bbls.....lb.	.06½	.06½	.06½	.06½
.....	.01½	.01½	.01½	Satin, White, 500 lb bbls.....lb.	.....	.01½	.01½	.01½
.18½	.66	.47	.57	Shellac Bone dry bbls.....lb.	...	.58½	.62½	.49
.15	.57	.41	.48	Garnet, bags.....lb.	.45	.46	.55	.45
.14½	.65	.40	.52½	Superfine, bags.....lb.	.....	.48	.58	47
.15½	.37	.57	.49	T. N. bags.....lb.	.....	.45	.55	.42
1918	.50	.50	.50	Schaeffer's Salt, kegs.....lb.	.53	.57	.57	.53



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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1917 71.7c - April 1928 67.8c

100 lbs. for the balance of the year; and $2.20 per 100 lbs. for the first six months of 1929. The summary of position as of July 31 is as follows:

Visible Supply:	1928
Europe and Egypt	415,000
United States	139,000
Japan and other countries	32,000
Stocks in Chile	753,000
Total supply in sight at July 31	1,339,000

Sodium Silicoflouride — In anticipation of a higher tariff the market was quite firm throughout the month, and the rumors were confirmed by the announcement early this month of an increase in duty. Sales during August brought the full market value of 4⅜c @ 4½c lb.

Soda Ash — Sales during August were somewhat in excess of sellers expectations in most cases and they now look forward to the Fall months very optimistically, when a renewal of heavy contract withdrawals is expected to add new impetus to the strength of the market.

Starch — Slackened demand and lower prices in the raw material market have combined to lower the price on corn starch 15c per 100 lbs. since last reported. Powdered is now at $4.07 @ $4.27 per 100 lbs., and pearl at $3.97 @ $3.17 per 100 lbs.

Turpentine — The past month has been one of declining prices in this market as well as in that for rosin. The reason has been large offerings and lack of demand. Spirits are now at 50½c @ 55½c gal. and steam distilled at 47c gal.

Valonia Beard — Now quoted at $68 per ton. Supplies of mixture have also become available and are quoted at $54 per ton. Cups are still nominal.

Wattle Bark — Is somewhat lower in price due to some recent arrivals. Now quoted at $56.75 per ton.

OILS AND FATS

Castor Oil — Producers recently announced a decline in price on all grades. No. 1 is now at 13c @ 13½c lb.; No. 3 at 12½c @ 13c lb. and Blown at 14c @ 15c lb.

Chinawood Oil — Accumulation of supplies at the Coast has brought about a steady decline in price since last reported. As a result, barrels, spot, are ¾c lb. lower and tanks at the Coast, ¾ c @ 1c lb. lower than last month. The former is quoted at 14¾c lb. and the latter at 13c @ 13¼c lb. Import statistics of China wood oil for June, reveal that the total quantity of wood oil imported from China amounted to 16,224,800 pounds,

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
.....	6.00	6.00	6.00	Silica, Crude, bulk mines....ton	8.00	11.00	11.00	8.00
.....	15.00	15.00	15.00	Refined, floated bags.....ton	22.00	30.00	30.00	22.00
.....	32.00	32.00	32.00	Air floated bags.....ton	.....	.....	.....	.....
.....	55.00	55.00	55.00	Extra floated bags.....ton	32.00	40.00	40.00	32.00
10.00	15.00	15.00	15.00	Soapstone, Powdered, bags f.o.b. mines.....ton	15.00	22.00	22.00	15.00
				Soda				
.67½	1.32½	1.32½	1.32½	Soda Ash, 58% dense, bags c-1 wks.....100 lb.	.....	1.40	1.40	1.40
.57½	2.14	2.04	2.12	58% light, bags del NY.100 lb.	2.04	2.29	2.29	2.04
.....	1.32½	1.32½	1.32½	Contract, bags c-1 wks.100 lb.	.....	1.32½	1.32½	1.32½
2.50	4.16	4.06	4.14½	Soda Caustic, 76% grnd & flake drums del NY.....100 lb.	4.16	4.21	4.21	4.16
.....	3.76	3.66	3.74½	76% solid drs del NY...100 lb.	3.76	3.91	3.91	3.76
.....	3.00	3.00	3.00	Contract, c-1 wks.....100 lb.	.....	3.00	3.00	3.00
.03½	.04½	.04½	.04½	Sodium Acetate, crystals, 450 lb bbls wks.....lb.	.04½	.05	.05	.04½
.....	.19	.18	.18½	Arsenate, drums.. .....lb.	.....	.....	.....	.....
.....	1.00	1.00	1.00	Arsenite, drums.....gal.	.....	.....	.....	.....
1.00	2.41	2.41	2.41	Bicarb., 400 lb bbl NY..100 lb.	.....	2.41	2.41	2.41
.04½	.06½	.06½	.06½	Bichromate, 500 lb cks wks.lb.	.07	.07½	.07	.06½
.02½	.08½	.08½	.08½	Bisulfite, 500 lb bbl wks....lb.	.....	.04	.04	.04
.60	1.30	1.30	1.30	Carb. 350 lb bbls NY...100 lb.	1.30	1.35	1.35	1.30
.07½	.06½	.06½	.06½	Chlorate, 112 lb kegs wks...lb	.05½	06½	.06½	.05½
.....	12.00	12.00	12.00	Chloride, technical.....ton	12.00	13.00	13.00	12.00
.22	.20	.20	.20	Cyanide, 96-98%, 100 & 250 lb drums wks.....lb.	.....	.20	.20	.20
1918	.08½	.08½	.08½	Fluoride, 300 lb bbls wks...lb.	.08½	.09	.09	.08½
.....	.22	.22	.22	Hydrosulfite, 200 lb bbls f.o.b. wks.....lb.	.22	.24	.24	.22
.....	.05	.05	.05	Hypochloride solution, 100 lb cbys.....lb.	.....	.05	.05	.05
1.40	2.65	2.65	2.65	Hyposulfite, tech, pea crys 375 lb bbls wks....100 lb.	2.65	3.05	3.05	2.65
1.30	2.40	2.40	2.40	Technical, regular crystals 375 lb bbls wks... 100 lb.	2.40	2.65	2.65	2.40
.....	.70	.45	.62	Metanilate, 150 lb bbls.....lb.	.....	.45	.45	.45
.....	.02½	.02½	.02½	Monohydrate, bbls.....lb.	.....	.....	.....	.....
1918	.55	.55	.55	Naphthionate, 300 lb bbl...lb.	.55	.57	.57	.55
2.12½	2.67	2.25	2.52½	Nitrate, 92%, crude, 200 lb bags c-1 NY.....100 lb.	.....	2.12½	2.45	2.12½
.05½	.08½	.08	.08	Nitrite, 500 lb bbls spot ...lb.	.07½	.08	.08½	.07½
.....	.25	.25	.25	Orthochlorotoluene, sulfonate, 175 lb bbls wks.....lb	.25	.27	.27	.25
.....	.20	.20	.20	Oxalate Neut, 100 lb kegs..lb.	.20	.23	.23	.20
.....	3.90	3.90	3.90	Paratoluene, tri-sodium, tech. 100 lb bbls c-1....100 lb.	.....	3.90	3.90	3.90
.....	.08	.08	.08	Sulfonate, 175 lb bbls....lb.	.08	.09	.09	.08
.19	.21	.21	.21	Perborate, 275 lb bbls.....lb.	.21	.22	.22	.21
2.12½	3.25	3.25	3.25	Phosphate, di-sodium, tech. 550 lb bbls.....100 lb.	3.25	3.55	3.55	3.25
.....	.69	.69	.69	Picramate, 100 lb kegs.....lb.	.69	.72	.72	.69
.08½	.12	.11	.12	Prussiate, Yellow, 350 lb bbl wks.....lb.	.12	.12½	.12½	.12
.....	.13½	.13½	.13½	Pyrophosphate, 100 lb keg..lb.	.13½	.14	.14	.13½
.02	1.20	1.20	1.20	Silicate, 40 deg clear 55 gal drs wks.....100 lb.	1.20	1.45	1.45	1.20
.02	.85	.85	.85	40 deg turbid 55 gal drs wks.....100 lb.	.85	1.10	1.10	.85
.....	.04½	.04½	.04½	Silicofluoride, 450 lb bbls NY .....lb.	.04½	.05	.05	.04½
.....	.48½	.48½	.48½	Stannate, 100 lb drums.....lb.	.48½	.49	.49	.48½
.....	.20	.20	.20	Stearate, bbls.....lb.	.18	.22	.29	.18
.....	.16	.16	.16	Sulfanilate, 400 lb bbls.....lb.	.16	.18	.18	.16
.....	.02½	.02½	.02½	Sulfate Anhyd., 550 lb bbls c-1 wks.....lb.	.02½	.02½	.02½	.02½
.01½	.02½	.02½	.02½	Sulfide, 30% crystals, 440 lb bbls wks.....lb.	.02½	.02½	.02½	.02½
.....	.03½	.03½	.03½	62% solid, 650 lb drums 1c-1 wks.....lb.	.03½	.04	.04	.03½
.02½	.03½	.03½	.03½	Sulfite, crystals, 400 lb bbls wks.....lb.	.03½	.03½	.03½	.03½
.....	.40	.40	.40	Sulfocyanide, bbls.....lb.	.40	.50	.50	.40
.....	.85	.80	.82½	Tungstate, tech, crystals, kegs .....lb.	.80	.85	.85	.80
1917	.40	.35	.37	Solvent Naphtha, 110 gal drs wks.....gal.	.35	.40	.40	.35
1918	.01½	.01½	.01½	Spruce, 25% liquid, bbls.....lb.	.....	.01½	.01½	.01½
1918	.01	.01	.01	25% liquid, tanks wks.....lb.	.....	.01	.01	.01
.....	.02	.02	.02	50% powd., 100 lb bag wks.lb.	.02	.02½	.02½	.02
.....	3.22	3.07	3.14½	Starch, powd., 140 lb bags .....100 lb.	4.07	4.27	4.42	3.07
1.99	3.12	2.97	3.03	Pearl, 140 lb bags.....100 lb.	3.97	4.17	4.32	2.97
.05½	.06	.04½	.05½	Potato, 200 lb bags .....lb	.05½	.06½	.06½	.05½
.05½	.06½	.06½	.06½	Imported bags.....lb	.05½	.06½	.06½	.05½
.05½	.08	.06	.07	Soluble.....lb.	.08	.08½	.08½	.08
.07	.09½	.09	.09½	Rice, 200 lb bbls.....lb.	.09½	.10	.10	.09½
.04½	.06½	.06½	.06½	Wheat, thick bags.....lb.	.06½	.07	.07	.06½
.04½	.09½	.09½	.09½	Thin bags.....lb.	.09½	.10	.10	.09½
1918	.07½	.07½	.07½	Strontium carbonate, 600 lb bbls wks.....lb	.07½	.07½	.07½	.07½
.07½	.08½	.08	.08	Nitrate, 600 lb bbls NY....lb.	.08½	.09	.09	.08½
				Sulfur				
1.85	2.05	.205	2.05	Sulfur Brimstone, broken rock, 250 lb bag c-1.....100 lb.	.....	2.05	2.05	2.05
.....	18.00	18.00	18.00	Crude, f.o.b. mines.... ton	18.00	19.00	19.00	18.00
.....	2.40	2.40	2.40	Flour for dusting 99½%, 100 lb bags c-1 NY.....100 lb.	.....	2.40	2.40	2.40
2.00	2.50	2.50	2.50	Heavy bags c-1.....100 lb.	.....	2.50	2.50	2.50
2.20	3.45	3.45	3.45	Flowers, 100%, 155 lb bbls c-1 NY.....100 lb.	.....	3.45	3.45	3.45
1.85	2.65	2.65	2.65	Roll, bbls 1c-1 NY.....100 lb.	2.65	2.85	2.85	2.65

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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

having a value of $1,199,970, as compared with 11,825,643 pounds, valued at $1,653,225 for the corresponding month of last year. Figures for the first six months of this year were lower than the first six months of last year. Comparative imports in quantity and values were, respectively, 52,813,219 pounds, valued at $5,717,169, and 53,452,062 pounds, valued at $6,806,036.

July exports of wood oil from Hankow totaled 14,231,140 pounds, of which quantity 12,272,260 pounds were destined to the United States and 1,957,340 pounds to Europe. It was estimated roughly that the unsold stocks at Hankow the end of July were approximately 500 tons.

Cocoanut Oil — During the past month this market has been in a rather dormant position. Large quantities of copra available at a somewhat lower price have had a very depressing effect upon the market for cocoanut oil and the general expression is one of gratification that the market has held up as well as it has. All grades, however, are from ⅛c @ ½c lb. lower than when last quoted with the market as yet showing no signs of improvement.

Cod Oil — Has been rather weak during the past month which has resulted in lower prices. Barrels are now quoted at 63c @ 64c lb. and tanks at 60c lb. The market continues in poor condition with but slight demand.

Corn Oil — This market has at last retreated from the exceedingly strong position it has maintained for almost six months. Crude oil is now quoted at 8½c @ 8¾c lb. in tanks at the mills, and 10¾c lb. in barrels, spot. Refined oil is also lower being quoted at 11¾c lb. in barrels and 10¾c lb. in tanks.

Cottonseed Oil — There is still but little trading going on in crude oil but quotations are at 7¾c @ 8c lb. PSY on spot is somewhat lower than when last reported, being quoted at 9.34c lb. while futures are about the same, 9.60c lb. Bureau of Census reports 280,530 running bales of cotton, counting round bales as halves and excluding linters, ginned from the crop of 1928 prior to August 16. This compares with ginnings to August 16 in 1927 of 455,388 and in 1926 of 182,255 bales.

Grease — Yellow has been somewhat strong during the past month and is now quoted at 7¼c @ 7⅜c lb., an advance of ⅛c lb. during the month.

Herring Oil — Has again become nominal in price as there is no quantity available.

Lard Oil — Prime has declined somewhat during the month and is now quoted

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
				Sulfur Chloride, red, 700 lb drs wks.....lb.	.05	.05½	.05½	.05
.....	.05	.05	.05	Yellow, 700 lb drs wks.....lb.	.03½	.04½	.04½	.03½
.....	.03¾	.03¼	.03½	Sulfur Dioxide, 150 lb cyl....lb.	.08	.08½	.08½	.08
.....	.08	.08	.08	Extra, dry, 100 lb cyl.....lb.	.17	.19	.19	.17
.....	.17	.17	.17	Sulfuryl Chloride, 600 lb dr...lb	.10	.65	.65	.10
.....	.65	.65	.65	Stainless, 600 lb bbls.....lb.	.11	.11½	.11½	.11
.....	.11	.11	.11	Extract, 450 lb bbls.....lb.	.05½	.06	.06	.05½
.....	.05	.05	.05	Sicily Leaves, 100 lb bg...ton	.....	130.00	130.00	130.00
.....	130.00	130.00	130.00	Ground shipment.....ton	.....	72.00	72.00	72.00
62.00	80.00	72.00	73.75	Virginia, 150 lb bags.....ton	55.00	60.00	60.00	55.00
40.00	55.00	55.00	55.00	Talc, Crude, 100 lb bgs NY..ton	12.00	15.00	15.00	12.00
.....	12.00	12.00	12.00	Refined, 100 lb bgs NY..ton	16.00	18.00	18.00	16.00
15.00	16.00	16.00	16.00	French, 220 lb bags NY...ton	30.00	35.00	35.00	30.00
15.00	30.00	30.00	30.00	Refined, white, bags....ton	38.00	45.00	45.00	38.00
.....	38.00	38.00	38.00	Italian, 220 lb bags NY...ton	40.00	50.00	50.00	40.00
35.00	40.00	40.00	40.00	Refined, white, bags....ton	50.00	55.00	55.00	50.00
.....	50.00	50.00	50.00	Tankage Ground NY.....unit	.....	4.65&10	5.10&10	4.65&10
3.50	4.85	4.00	4.41	High grade f.o.b. Chicago.unit	.....	4.25&10	4.25&10	3.90&10
3.10	5.25	3.75	4.29	South American cif.....unit	.....	5.00&10	5.00&10	4.60&10
.....	5.25	4.00	4.38½	Tapioca Flour, high grade bgs.lb.	.04½	.05	.05	.04½
.02	.04½	.04¼	.04¼	Medium grade, bags.....lb.	.03¾	.04	.04	.03¾
.01¾	.03¾	.03½	.03½	Tar Acid Oil, 15%, drums...gal.	.26	.27	.27	.26
.....	.26	.26	.26	25% drums.....gal.	.29	.30	.30	.29
.....	.29	.29	.29	Coke Oven, tanks wks.....lb	.07	.08	.08	.07
.....	.07	.07	.07	Kiln Burnt, bbl.....bbl.	.....	13.50	13.50	13.50
6.50	16.00	13.50	14.87½	Retort, bbls.....bbl.	13.50	15.00	15.00	13.50
6.76	18.50	13.50	15.38½	Terra Alba Amer. No. 1, bags or bbls mills.....100 lb.	1.15	1.75	1.75	1.15
.75	1.15	1.15	1.15	No. 2 bags or bbls...100 lb.	1.50	2.00	2.00	1.50
.60	1.50	1.50	1.50	Imported bags.....100 lb.	.02	.02½	.02½	.02
.80	2.00	2.00	2.00	Tetralene, 50 gal drs wks.....lb.	.....	.20	.20	.20
.....	.20	.20	.20	Thiocarbanilid, 170 lb bbl.....lb.	.22	.24	.24	.22
.....	.22	.22	.22	Tin Bichloride, 50% soln, 100 lb bbls wks.....lb.	.....	.14½	.17½	.14½
.11½	.20½	.17½	.19	Crystals, 500 lb bbls wks...lb.	.....	.36½	.41½	.36½
.23	.48	.41½	.45	Metal Straits NY.....lb.	.....	.48	.58	.48
.....	.71½	.58	.65	Oxide, 300 lb bbls wks.....lb.	.....	.53	.75	.53
.36	.75	.70	.71	Tetrachloride, 100 lb drs wks.....lb.	.....	.30½	.35½	.30½
.....	.48	.35½	.39	Titanium Oxide, 200 lb bbl...lb.	.....	.40	.40	.40
.....	.40	.40	.40	Pigment, bbls wks.....lb.	.13½	.14	.14	.13½
.....	.13½	.13½	.13½	Toluene, 110 gal drs wks.....lb.	.....	.40	.40	.40
1918	.40	.40	.40	8000 gal tank cars wks.....lb.	.....	.35	.35	.35
.....	.35	.35	.35	Toluidine, 350 lb bbls.....lb.	.90	.94	.94	.90
1918	.90	.90	.90	Mixed, 900 lb drs wks.....lb.	.31	.32	.32	.31
1918	.31	.31	.31	Toner Lithol, red, bbls.....lb.	.85	.90	.90	.85
.....	.85	.85	.85	Para, red, bbls.....lb.	.70	.75	.80	.70
.....	.75	.75	.75	Toluidine.....lb.	1.70	1.75	1.80	1.70
1918	1.75	1.75	1.75	Triacetin, 50 gal drs wks.....lb.	3.60	3.90	3.90	3.60
.....	3.60	3.60	3.60	Tricresyl Phosphate, drs.....lb.	.36	.50	.50	.36
.....	.36	.36	.36	Triphenylguanidine.....lb.	.69	.73	.73	.69
.....	.70	.69	.69	Phosphate, drums.....lb.	.70	.75	.75	.70
.....	.70	.70	.70	Tripoli, 500 lb bbls.....100 lb.	2.50	3.00	3.00	2.50
.....	2.50	2.50	2.50	Turpentine Spirits, bbls.....gal.	.50½	.55½	.64½	.50½
.49	.86	.53½	.65	Wood Steam dist. bbls.....gal.	.....	.47	.59	.46
.34	.76	.46	.55	Urea, pure, 112 lb cases.....lb.	.18	.20	.20	.18
.....	.18	.18	.18	Valonia Beard, 42%, tannin bags.....ton	.....	68.00	76.00	68.00
.....	70.00	66.00	61.52	Cups, 30-31% tannin.....ton	.....	Nom.	55.00	55.00
.....	49.50	39.00	43.96	Mixture, bark, bags.....ton	.....	54.00	64.00	54.00
.....	68.00	43.00	48.52	Vermilion, English, kegs.....lb.	1.85	1.90	1.95	1.75
.55	1.95	1.55	1.94¼	Wattle Bark, bags.....ton	.....	56.75	76.00	55.00
.....	59.00	49.50	53.71	Extract 55%, double bags ex-dock.....lb.	.....	.06½	.06½	.05½
.....	.05½	.05½	.05½	Whiting, 200 lb bags, c-l wks.....100 lb.	.....	1.25	1.25	1.25
.45	1.25	1.25	1.25	Alba, bags c-1 NY.....ton	.....	13.00	13.00	13.00
.....	13.00	13.00	13.00	Gilders, bags c-1 NY...100 lb.	.....	1.35	1.35	1.35
.55	1.35	1.35	1.35	Zinc Ammonium Chloride powd., 400 lb bbls.....lb.	5.25	5.75	.05½	5.85
.....	.06½	.06½	06½	Carbonate Tech, bbls NY..lb.	.09½	.10	.10	.09½
.08½	.09½	.09½	.09½	Chloride Fused, 600 lb drs. wks.....lb.	.....	.06	.06	.06
.04½	.06	.06	.06	Gran., 500 lb bbls wks.....lb.	.06½	.06½	.06½	.06½
.04½	.06½	.06½	.06½	Soln 50%, tanks wks...100 lb.	.....	3.00	3.00	3.00
.....	3.00	3.00	3.00	Cyanide, 100 lb drums.....lb.	.40	.41	.41	.40
.....	.40	.40	.40	Dust, 500 lb bbls c-1 wks...lb.	.....	.09	.09	.09
.05¼	.09	.09	.09	Metal, high grade slabs c-1 NY.....100 lb.	.....	6.45	6.40	6.07½
.....	7.35	6.40	6.66	Oxide, American bags wks..lb.	.07½	.07½	.07½	.07½
.05½	.07½	07½	.07½	French, 300 lb bbls wks..lb.	.10½	.12½	.12½	.10½
.06½	.10½	.10½	.10½	Sulfate, 400 bbl wks.....lb.	.03½	.03½	.03½	.03½
.02½	.03½	03	.03½	Sulfide, 500 lb bbls.....lb.	.30	.32	.32	.30
.....	.30	.30	.30	Sulfocarbolate, 100 lb keg..lb.	.29	.30	.30	.29
.....	.29	.29	.29	Xylene, 10 deg tanks wks....lb.	.....	.32	.32	.32
.....	.38	32	.37	Commercial, tanks wks....lb.	.30	.32	.32	.30
.....	.36	.30	.35	Xylidine, crude.....lb.	.....	.38	.38	.38
1918	.35	.35	.35	Zirconium Oxide, Nat. kegs..lb.	.02½	.03	.03	.02½
.....	.02½	.02½	.02½	Pure kegs.....lb.	.45	.50	.50	.45
.....	.45	.45	.45	Semi-refined kegs.....lb.	.08	.10	.10	.08
.....	.08½	.08	.08					

Oils and Fats

.08	.14	.13	.13	Castor, No. 1, 400 lb bbls....lb.	.13	.13½	.14½	.13
.08	.14	.12½	.13½	No. 3, 400 lb bbls.....lb.	.12½	.13	.14	.12½
.....	.18	.17	.18	Blown, 400 lb bbls.....lb.	.14	.15	.17	.14
.06½	.31	.13½	.19	China Wood, bbls spot NY...lb.	.....	.14½	.17	.14½
.05½	.18	.12½	.16½	Tanks, spot NY.....lb.	.....	Nom.	Nom.	Nom.
				Coast tanks, Sept.....lb.	.13	.13½	.14¼	.12¼
1918	.12	.12	.12	Cocoanut, edible, bbls NY....lb.	.....	.10½	.11½	.10½
.09½	.09½	.09	.09	Ceylon, 375 lb bbls NY....lb.	.09½	.9½	.10	.09½
.08½	.08½	.08	.08¾	8000 gal tanks NY.....lb.	.08½	.8½	.09	.08½
.10½	.10½	.09½	.10	Cochin, 375 lb bbls NY....lb.	.09½	.10	.10½	.09½

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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

at 16c lb., ¼c lb. lower than when last reported. Other grades are unchanged.

Linseed Oil — Has been exceptionally quiet during the past month, and the market has eased off considerably. Tanks are now at 8.8c lb. Sept.-Apr., which marks a decline of 3c lb. since last reported. Barrels are also lower at 9.6c lb., which marks a similar decline. Five barrel lots are quoted at 10.1 f. o. b. warehouse.

Menhaden Oil — Fishing reports have continued favorable with the result that crude has declined during the past month and is now 2½c gal. lower in price than when last quoted. Quotations are now at 40c gal. at Baltimore.

Oleo Oil — No. 1 and No. 2 have moved into somewhat lower position during the past month and are now quoted at 13c lb. and 11¾c lb. respectively.

Olive Oil — The market has advanced considerably due to the fact that supplies are limited. The reports from new crop are unfavorable but there is a tendency to discount them as the July reports of last year were also unfavorable and yet the crop set a new record for size. The general belief is that enormous quantities are in the hands of factors in the primary market who are endeavoring to bolster up the market and dispose of their stocks before next year. Quotations here are at $1.35 @ $1.40 gal. for denatured and 10⅜c @ 10½c lb. for foots. Demand is only nominal for the former but somewhat better for the latter.

Palm Kernel Oil — Supplies are plentiful and the price has declined to 8¾c lb. during the past month.

Palm Oil — Both Lagos and Niger are lower in price, the former being quoted at 7⅞c @ 8c lb. and the latter at 7½c @ 7⅝c lb.

Rapeseed Oil — English is lower at 86c @ 88c lb. while quotations on Japanese are strictly nominal, there being no more supplies available.

Sardine Oil — Supplies of this oil have become available with the advancing season and quotations are now at 41c gal.

Stearic Acid — In the face of good demand has staged a large and consistent advance in price throughout the past month. Double pressed distilled is now 1¼c lb. higher than when last quoted; double pressed saponified, 1½c lb. lower than when last quoted; and triple pressed distilled, 2¼c lb. higher than when last quoted. In addition to, good demand, the raw material price has been advancing, and these two factors have combined to create much higher prices.

Stearine Oleo — Has advanced ⅝c lb. since last reported and continues strong and in good demand.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.05⅞	.10	.08½	.09½	Tanks NY.....lb.	.08¾	.09	.09¾	.08¾
.....	.09¼	.08¼	.09¼	Manila, bbls NY.....lb.	.09	.09¼	.10	.09
.....	.08¼	.08¼	.08⅝	Tanks NY.....lb.	.08¼	.08¼	.08¼	.08¼
.....	.08¼	.08	.08¼	Tanks, Pacific Coast.....lb.	.07¼	.07¼	.08¼	.07¼
				Cod, Newfoundland, 50 gal bbls				
.36½	.66	.63	.64½	.....gal.	.63	.64	.69	.63
.36½	.59	.59	.59	Tanks NY.....lb	.....	.60	.63	.60
				Cod Liver see Chemicals.....				
1918	.06	.06	.06	Copra, bags.....lb.	.....	.05½	.06¼	.05½
.06½	.11	.07	.10	Corn, crude, bbls NY.....lb.	.....	.10½	.11	.10
.06¼	.09¼	.07	.08¼	Tanks, mills.....lb.	.08½	.08¾	.10	.08¾
1916	.14	.10½	.12	Refined, 375 lb bbls NY....lb.	.....	.11¼	.12½	.11¼
1916	.12	.11	.11	Tanks.....lb.	.....	.10¾	.11½	.10¾
.06	.09½	.06¼	.08	Cottonseed, crude, mill.....lb.	.07¾	.08	.09½	.07¾
.07½	.11¼	.08 1/5	.10	PSY, 100 lb bbls spot.....lb.	.....	9.34	10.65	.09½
				June—Au5.....lb.	.....	9.60	10.75	.09½
				Degras, American, 50 gal bbls				
.02¾	.04½	.04¼	.04½	NY.....lb.	.04½	.05	.05	.04½
.03½	.04½	do	do	English, brown, bbls NY...lb.	.....	.05¾	.05¼	.04¼
.03½	.05¼	.05¼	.05¼	Light, bbls NY.....lb.	.....	.05¾	.05¾	.05¼
.04¾	.07½	.06	.06⅜	Greases, Brown.....lb.	.07	.07¼	.07½	.07
.05¼	.08	.06½	.07¼	Yellow.....lb.	07½	.07¼	.08	07
.06¼	.10⅛	.08¼	.09⅜	White, choice bbls NY,....lb.	.....	.09¼	.10¼	.09¼
.....	.....	.....	.....	Herring, Coast, Tanks.....gal.	.....	Nom.	.42½	.40
.009	.09½	.09	.09⅛	Horse, bbls.....lb.	.09½	Nom.	Nom.	.09½
.13	.16¾	.14¾	.15½	Lard Oil, edible, prime.....lb.	.....	.16	.16½	.15½
.....	.13¾	.10¾	.12	Extra, bbls.....lb.	.....	.12½	.13	.12
.09	.12½	.10⅛	.11¼	Extra No. 1, bbls.....lb.	.....	.12¼	.12¼	.11¾
.078	.11 4/5	.10 2/5	.11	Linseed, Raw, five bbl lots....lb.	.....	10.1	10.8	10.0
.077	.11 9-10	.09 6-10	.10⅛	Bbls c-l spot.....lb.	.. ..	9.6	10.4	9.6
.076	.10½	.09	.09 7-12	Tanks.....lb.	.....	8.8	9.6	8.8
.....	.09¾	.09¾	.09¾	Lumbang, Coast.....lb.	.....	.09¾	.09¾	.09¾
.33½	.47½	.44	.46⅜	Menhaden Tanks, Baltimore.gal.	.....	.40	.46	.40
.....	.90	.10	.36⅜	Blown, bbls NY.....lb.	.....	.09	.09	.09
.43	.70	.67	.68½	Extra, bleached, bbls NY. gal.	.....	.70	.70	.67
.39	.66	.63	.62	Light, pressed, bbls NY....gal.	.63	.64	.64	.63
.37	.66	.69	.67¼	Yellow, pressed, bbls NY gal.	.66	.67	.67	.66
				Mineral Oil, white, 50 gal bbls				
				.....gal.	.40	.60	.60	.40
				Russian, gal.....gal.	.95	1.00	1.00	.95
.14	.18¾	.14½	.17½	Neatsfoot, CT, 20° bbls NY..lb.	.....	.18½	.18¾	.18¼
.....	.13½	.10½	.12	Extra, bbls NY.....lb.	.....	.12½	.12½	.12
.....	.16¾	.12¼	.14½	Pure, bbls NY.....lb.	.....	.15¼	.16½	.15½
.08	.18½	.10	.13¾	Oleo, No. 1, bbls NY .....lb.	.....	.13	.17⅞	.13
.07½	.17	.08¾	.12	No. 2, bbls NY.....lb.	.....	.11¾	.15½	.11¾
.07¼	.14	.08½	.10½	No. 3, bbls NY.....lb.	.....	.11	.14	.11
.83	1.75	1.40	1.48½	Olive, denatured, bbls NY...gal.	1.35	1.40	1.40	1.18
1918	2.00	2.45	2.15	Edible, bbls NY.....gal.	1.75	2.00	2.00	1.75
.07½	.10½	.08¾	.09⅛	Foots, bbls NY.....lb.	.10⅜	.10½	.10½	.09¾
.08¼	.09½	.09	.09½	Palm, Kernel, Casks.....lb.	.....	.08¾	.09¼	.08¾
.07	.08¾	.07½	.08	Lagos, 1500 lb casks.....lb.	.07¼	.08	.08¼	.07¾
.....	.08¼	.07½	.07½	Niger, Casks.....lb.	.07½	.07¾	.07¾	.07
.....	.14½	.12	.12	Peanut, crude, bbls NY.....lb.	.12	.12¼	.12½	.12
.....	.15½	.14½	.15	Refined, bbls NY.....lb.	.14½	.15	.15	.14½
.....	.16½	.12½	.14	Perilla, bbls NY.....lb.	.13½	.13¾	.13¾	.13
.....	.14½	.10	.12	Tanks, Coast.....lb.	.....	.12	.12	.10½
.....	1.70	1.70	1.70	Poppyseed, bbls NY.....gal.	1.70	1.75	1.75	1.70
.63	1.05	1.00	1.01	Rapeseed, blown, bbls NY...gal.	.....	1.04	1.06	1.01
.....	.90	.82	.87	English, bbls NY.....gal.	.86	.88	.92	.87
.....	.85	.76	.80⅝	Japanese, bbls NY.....gal.	.....	Nom.	.90	.82
.06½	.10	.09	.09	Red, Distilled, bbls.....lb.	.09½	.10½	.10½	.09½
.....	.09½	.08½	.08⅝	Tanks.....lb.	.....	.09	.09½	.08
.....	.50	.50	.50	Salmon, Coast, 8000 gal tks..gal.	.50	Nom.	Nom.	.50
.....	.47	.43	.45	Sardine, Pacific Coast tks....gal.	.....	.41	.45	.41
.08½	.13	.11½	.12½	Sesame, edible, yellow, bbls...lb.	.12¾	.13¼	.13½	.12
.....	.14	.14	.14	White, bbls.....lb.	.13	.13½	.15	.13
.34	.40	.40	.40	Sod, bbls NY.....gal.	.....	.40	.40	.40¼
.....	.09¾	.09½	.09¾	Soy Bean, crude.....				
.06½	.....	.....	.....	Pacific Coast, tanks.....lb.	.09¾	.09¾	.09¾	.09
.....	.12½	.10¾	.12	Soy Bean, crude, bbls NY....lb.	.12¼	.12½	.12½	.12
.....	.11	.10½	.10½	Tanks NY.....lb.	.....	.10¾	.10¾	.10½
.....	.13	.12	.13	Refined, bbls NY.....lb.	.13¼	.13¾	.13¾	.13¼
				Sperm, 38° CT, bleached, bbls				
.70	.85	.84	.84½	NY.....gal.	.84	.85	.85	.84
.68	.82	.79	.80½	45° CT, bleached, bbls NY.gal.	.79	.80	.80	.79
				Stearic Acid, double pressed dist				
1916	.13¼	.11½	.12	bags.....lb.	.12½	.12¾	.12¾	.11
				Double pressed saponified bags				
1916	.14	.11½	.12	.....lb.	.13¼	.13¾	.13¾	.11½
1916	.15½	.13½	.14	Triple, pressed dist bags...lb.	.16	.16½	.16½	.13½
.07¾	.13	.08¾	.11	Stearine, Oleo, bbls.....lb.	.11	.11¼	.11¾	.09½
.06	.09	.07½	.08	Tallow, City, extra loose.....lb.	.....	.08¼	.09½	.08¾
.07	.11	.08½	.10	Edible, tierces .....lb.	.09¾	.10	.10¾	.09¾
.09	.10¾	.08¾	.10	Tallow Oil, Bbls, c-1 NY...lb.	.....	.11½	.11¾	.11½
.09½	.12½	.10	.11	Acidless, tanks NY.....lb.	.....	.10½	.10¾	.10¼
.....	.08½	.07½	.07¾	Vegetable, Coast mats.....lb.	.08	Nom.	Nom.	.08
.04¾	.11	.11	.11	Turkey Red, single bbls.....lb.	.11	.12	.1	
.05½	.14	.14	.14	Double, bbls.....lb.	.14	.16	.16	.14
				Whale, bleached winter, bbls				
.50	.78	.78	.78	NY.....gal.	.78	.80	.80	.78
.52	.80	.80	.80	Extra, bleached, bbls NY..gal.	.80	.82	.82	.80
.48	.76	.76	.76	Nat, winter, bbls NY.....gal.	.76	.78	.78	.76

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BOSTON

All of the chemical houses in this territory, are complaining about business being exceedingly quiet. This is no doubt largely due to the season of the year. August is generally a light month and the chemical business in New England is generally quiet on account of the condition of the textile mills. Collections are very good and the most active item is blue vitriol which has been selling at a premium. Dealers have been buying from each other in this market at around 7½c per lb. This has eased off a little due to three different shipments of imported which have arrived within the past ten days. Wood and denatured alcohol have been selling freely for spot and future delivery, due to the advancing market on both of these commodities.

DETROIT

Chemical conditions in Detroit and vicinity are very good at the present time. A big percentage of the factories in Detroit are working both night and day which accounts for the increase in the chemical business. Collections are also very good.

KANSAS CITY

Business in the Heavy Chemical line in the middle-western territory has held up to very satisfactory volume all thru the summer months and every indication is for continued good movement this Fall. Crop conditions are excellent. The movement of copper sulfate has pretty well slowed down. Copper carbonate is just starting and collections are satisfactory.

ST. LOUIS

Business during the month of August was normal and kept pretty well abreast of July. With most of the manufacturing companies in this territory running at about 50 to 75% production, hand to mouth buying continued much in evidence. For the most part, chemical shipments have been of a routine nature, with very few large orders of importance.

Naval stores have been firm, withdrawals taking place against old contracts, but very few new contracts being made.

With the recent interest in chromium plating has come a moderate demand for chromic acid and chromium salts.

There have been two price changes of note. The firm position of Stearic Acid, which has maintained itself for the past two months became more apparent when the price went up ½c per pound. On the other hand, Vanillin manifested weakness

Massachusetts

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New England Agents
Seaboard Chemical Co.
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Franco-American Chemical Wks.
Amyl Acetate Pyroxylin Solutions
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Missouri

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Local Reports *from our Correspondents at the Principal Consuming Centers of Industrial Chemicals*

Missouri---(cont.)

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Double Refined
SALTPETRE and
NITRATE OF SODA
U. S. P.
Manufactured by
DAVIES NITRATE CO., INC.
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by declining 50c per pound. Collections continue fair.

There has been some talk of a new chemical manufacturing company and a new electro metallurgical plant moving to St. Louis, but at present there is nothing definite to report.

NEWARK

In the upholstery and shoe leather trades, the plants are running about 65% to 70% capacity and they expect to maintain this or a better average during the month of September. August business is considerably better than July and conditions for September seem quite attractive. Prices are advancing. The humid weather conditions within the last few weeks have held back automobile leather production very materially. Orders are piling up but the weather has caused the volume in August to be slower than that of July, but it is anticipated that with improved weather conditions the business will speed up materially. The price of hides is firm. Collections are good and a satisfactory volume is anticipated in the coming month or two.

As regards the textile business, the situation is not as good as in July. Large producers are restricting their output and many small plants are closed down entirely.

In colors and chemicals the situation is excellent. The volume for August is from 5% to 20% better than for August of 1927 and August 1928 is better in volume than any month for the last five months. Prices are stable. Collections, however, are only fair. There is little or no change in raw materials and plants are operating to about 90% capacity. This industry is in a better condition than many others in this territory.

Considerable cutting of prices is going on in alcohol as there seems to be a number of stocks in hands other than producers or their agents which are causing a material disturbance in the local market.

General business can be classed as fair and there seems to be a feeling of confidence as to business during the next two or three months.

CLEVELAND

Business in the Cleveland district is generally very good. The steel and automobile manufacturers are running at top speed, which means that allied lines are busy. The chemical manufacturers report excellent business. Paint and varnish makers also report as good business as is usual at this time of the year. Alcohol and Glycerine sales have been rather quiet. Rosin is being purchased on declines in the market.

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British Chemical Exports Regain Loss

The British foreign trade in chemicals and allied products for the period January to June, 1928, inclusive—amounting to £26,860,000 ($130,300,000) and £26,800,000 ($130,000,000) and £26,000,000 ($126,000,000 for the corresponding periods of 1927 and 1928, respectively—has recovered the losses recorded in the closing months of 1927, according to the chemical division, Department of Commerce.

Although a substantial increase in the value of exports was noted, a slight drop in the value of imports was recorded. The significant changes in the outward bound trade, which reached £15,200,000, were the improvements in industrial chemicals and fertilizers and the decrease in paints and varnishes. The inward bound trade, valued at £11,500,000, registered a considerable decline in coal tar products and fertilizers while an upward trend was revealed in drugs and medicines, linseed oil, and paints and varnishes.

Trade Commissioner Homer S. Fox, London, in his semi-annual report on the significant events occurring in England, cities several important changes in legislation affecting the chemical trade. The finance act places a tax on light hydrocarbon oils, including turpentine, and affects materials entering into the manufacture of various chemical and allied products, including paints and varnishes, polishes, synthetic camphor and terpincol, as well as the rubber, electrical and other industries.

Mr. Fox further states that the decision making calcium biphosphate of baking powder quality dutiable at 33 1-3 per cent. under the safeguarding of industries act, upon importation into the United Kingdom, was the most conspicuous of the official decisions recently made. The opinion is that this decision, which went into effect June 4, may mark the beginning of an extension of the import duty to a considerable range of other chemicals which are imported in large quantities.

Certain additions to the list of chemicals temporarily exempted from duty upon importation, however, have been made, including, among others, lactic acid, metaldehyde and methyl chloride. The chemicals are exempted from duty until the end of the year, according to the present regulation.

Exports for the first six months of 1928, valued at £15,200,000 ($73,800,000), exceeded shipments made during the corresponding periods of 1927 and 1926 by £1,100,000 ($5,300,000) and £950,000 ($4,600,000), respectively. A decline of 8 per cent. was noted in the import trade, the value dropping £1,100,000 in 1928. The total imports amounted to £11,500,000 ($55,810,000), as compared with £12,700,000 ($61,635,000) and £11,700,000 ($56,780,000) for 1927 and 1926, respectively.

The International Union of Superphosphate Producers, whose headquarters are at London, held its annual meeting at Stockholm during the first days of July, and at which representatives of 24 countries were present, reports Assistant Commercial Attache Daniel J. Reagan, Paris. These countries have a superphosphate production of 9,600,000 tons, as compared with a world production exclusive of the United States of 14,500,000 tons.

Some interesting statements were made by Dr. Krugel, director of the Experimental Station of the Union at Hamburg, with the reference to the action of superphosphates on the soil, and also by another member of the conference, with reference to the importance of superphosphates for the cultivation of beetroot. No commercial questions were discussed at this conference, which was purely for the promotion of common propaganda.

The Oberlandesgericht (superior county court) of Hanover has asked the Technische Hochschule Berlin to appoint an additional expert in the case of the suit brought by the I. G. Farbenindustrie against the Mont Cenis concern for alleged patent infringements in the fixation of nitrogen. Owing to the time required for the investigations which the new expert will have to make, an early judicial decision can not be expected, reports Consul Hamilton C. Claiborne, Frankfort on the Main.

Milestones in the History

OF

MUTUAL

BICHROMATES

1827 Isaac Tyson of Baltimore discovered crome ore in stones used to chock a cider barrel.

1828 Wood Mine, the largest chrome deposit in the country discovered near Lancaster, Pa.

1845 The first plant for the manufacture of Bichromate of Potash completed at Baltimore.

1884 Chrome tanning first commercially introduced.

1885 Sodium Bichromate manufactured commercially.

1897 The Jersey City Works commenced the manufacture of Bichromates.

1928 The Mutual Chemical Co. of America, after three quarters of a century continues to be the largest producer of Bichromates in the world.

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New Sodium Silico Aluminate Rate

The Public Service Commission at Albany, N. Y., has approved new freight rates of the Erie Railroad on sodium silico aluminate, carload, minimum weight 50,000 pounds, in bags or in bulk, and 40,000 pounds, in barrels or in iron drums, from Buffalo and Niagara frontier stations to New York State stations on Boston & Maine and New York, New Haven & Hartford, new rates ranging from 18½c to 26½c per cwt. Reduction from class rates, effective September 15.

Also of the Erie Railroad on same commodity from Buffalo and Niagara frontier stations to various carriers in trunk line territory Group D rates in tariff made applicable. Reductions from class rates. Effective September 15.

The commission has also approved new rates of the Erie Railroad on the same commodity, same classifications as to weight, from Buffalo stations, and Black Rock, East Buffalo, La Salle, Lockport, Niagara Falls, North Tonawanda and Suspension Bridge to various local stations. Group D rates in tariff made applicable. Reduction from class rates. Effective September 15.

Sales by the German Potash Syndicate for the year ended June 30, 1928, showed an increase of more than nine per cent. over the preceding year. The monthly potash sales for the periods mentioned are shown below expressed in metric tons of K_2O content:

	1926-27 *Metric tons*		*1927-28* *Metric tons*
July,	86,550	July,	88,820
August,	101,950	August,	84,550
September,	82,600	September,	118,629
October,	63,090	October,	63,730
November,	68,370	November,	68,353
December,	95,730	December,	100,470
January,	190,367	January,	202,010
February,	182,837	February,	208,400
March,	164,920	March,	161,460
April,	50,950	April,	67,414
May,	43,070	May,	63,746
June,	82,950	June,	99,948
Total.	1,213,384		1,327,530

By an order entered August 14 in Investigation and Suspension Docket No. 3151, the Interstate Commerce Commission suspended from August 15, 1928, until March 15, 1929, the operation of certain schedules as published in Supplement No. 38 to Agent F. L. Speiden's I. C. C. No. 1110, and various other agency tariffs and Missouri Pacific Railroad Company's tariff I. C. C. No. A-7296.

The suspended schedules propose increases and reductions in rates on fertilizer and material, including cottonseed cake, meal and hulls, carloads, between Mississippi Valley territory and points north of the Ohio River.

A Leipzig manufacturer has expressed a desire to Consul F. van den Arend, Leipzig, to be placed in touch with American firms exporting coal tar intermediates. This firm is interested in a number of products of this character and quotations are desired in lots of 100 kilos; small samples are requested. A list of the products together with the name and address of the inquiring firm will be furnished to properly accredited American firms upon application to the Chemical Division.

In connection with the establishment in Rumania of a new large rayon manufacturing plant by the Vereinigte Glatzwerke of Elberfeld, Germany, with the participation of the Banca Romanesca, the Rumanian Government has been petitioned to raise the import duty on rayon and rayon articles from 400 to 500 per cent., which would make the importation of rayon into Rumania prohibitive.

Manhattan-Kreole Products, Inc., is formed in New York by merger of Manhattan Shoe Polish Co., Inc., and Federal Kreole Chemical Co., Inc., both of New York.

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Italian Chemical Developments

Prior to 1919 no sodium carbonate was produced in Italy. In that year the Solvay Co. completed its plants at Rosignano and in 1925 the Monfalcone plant of the Adria company, which was severely damaged during the war, renewed operations. Production of anhydrous sodium carbonate rose from 5,200 tons in 1919 to 147,000 in 1926. The annual capacity of the plants in 1926 was 220,000 tons.

The problem of the industrial utilization of the chlorine obtained as a by-product from the electrolysis of sodium chloride in the manufacture of caustic soda has not yet been successfully solved by Italian manufacturers, and the fact that no disposal can be made of a large part of the chlorine weighs heavily on production costs and is a factor in keeping the output of the industry below actual plant capacity, the Assistant Trade Commissioner at Rome, E. Humes, informs the Department of Commerce in a report made public August 17. The full text of the report follows:

A part of the chlorine is used in the Italian manufacture of synthetic hydrochloric acid, part in the preparation of cellulose by the action of the gas on straw and esparto grass, but the most important outlet is in the manufacture of calcium hypochlorite. It is estimated that about 10 per cent. of total production of hydrochloric acid is obtained by direct synthesis in the caustic soda plants.

In 1926 Italian electrolytic caustic soda plants, if operating at full capacity, would produce 4,000 tons of liquid chlorine. Prewar production of calcium hypochlorite was 9,500 tons. By 1925 production reached its peak at 15,840 tons but in 1926 dropped to 13,700 tons. The domestic output of calcium hypochlorite exceeds home requirements and an export surplus is available. Exports, which were 5,090 tons in 1925, dropped to 2,496 tons in 1926 and registered a further decline in 1927 with shipments abroad of only 1,205 tons.

The amount of chemical cellulose obtained in caustic soda plants as a means of utilizing the excess chlorine rose from only 63 tons in 1921 to 2,870 tons in 1926. The esparto cellulose is largely exported to England for the manufacture of fine paper.

According to recent reports the manufacture of nitric acid in Switzerland has been successfully started by the Elektrizitaetswerk Lonza A. G. The factory for the manufacture of synthetic ammonia has been enlarged and similarly the production of synthetic nitrogen fertilizer has been increased during the past year.

The company is laying more and more emphasis upon the manufacture of cellulose acetate and its derivatives. As one important step towards increasing the importance of this branch, an entente has been formed with the N. V. Nederlansche Kuntzigefabrik ("Euka") for the manufacture of rayon, reports Assistant Trade Commissioner Kenneth M. Hill, Berne.

Finally revised figures on the production of arsenic from Canadian ores as reported by the Canadian Bureau of Statistics, show an output of 6,227,968 pounds valued at $211,979 in 1927, as compared with 5,074,677 pounds, valued at $146,811 in 1926. The greater part of the Canadian production of arsenic is obtained from the south Ontario smelters, as a by-product in smelting silver-cobalt ores. British Columbia's annual production of arsenic is contained in concentrates shipped from the Nickel Plate gold mine, to the Tacoma smelter. Nova Scotia's output in 1927, was contained in concentrates which were shipped to Australia.

Imports of synthetic dyes, for seven months ended 1928, totaled 3,124,077 pounds, valued at $2,480,259, against 2,247,482 pounds, valued at $1,858,556 for seven months of 1927, the Commerce Department states. Imports for July were 424,613 pounds, valued at $334,849, against 263,162 pounds, valued at $214,853 in July 1927. In the seven months, 65% of the imports came from Germany, and 23.7% from Switzerland.

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Carbonate of Potash	*Red Prussiate of Potash*
Case Hardening Compounds	*Soda Ash*
Caustic Soda	*Sodium Sulphide*
Copper Sulphate	*Sulphur*
Cyanide, Aero Brand	*Sulphocyanides (Thiocyanates)*
Cyanide, Copper	*Thiourea*
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Cyanide, Silver	
Cyanide, Sodium	*Yellow Prussiate of Soda*
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U. S. Fertilizer Imports Increase

Imports of fertilizers into the United States for the first six months of 1928 showed a marked general increase, according to the Department of Commerce. Synthetic nitrogenous fertilizers recorded an increase of 85 per cent. over the first six months of 1927; nitrate of soda imports increased 94 per cent.; potash fertilizers 71 per cent.; the group consisting of guano, dried blood, tankage and phosphates increased 37 per cent.; and imports of all other fertilizers 56 per cent. The fertilizer group as a whole shows an increase of approximately 80 per cent.

The following table gives in detail the imports of fertilizers into the United States during the first six months of 1926, 1927, and 1928:

	1926	*1927*	*1928*
	Long tons	*Long tons*	*Long tons*
Calcium cyanamide	45,500	48,000	64,400
Calcium nitrate	8,100	12,900	18,000
Ammonium sulphate nitrate	10,700	6,650	29,700
Ammonium sulphate	7,250	2,350	23,200
All other nitrogenous	29,950	20,500	32,000
Total	101,500	90,400	167,300
Sodium nitrate	635,896	368,500	713,400
Muriate of potash	98,455	62,135	90,450
Potash sulphate	19,278	19,939	32,420
Kainite	99,929	65,255	67,103
Manure salts	118,835	48,449	146,252
Other potash bearing salts	32,413	2,253	3,750
Total	368,910	198,031	339,975
Compound fertilizers			2,821
Guano	4,741	13,647	8,317
Dried blood	5,280	6,588	4,284
Tankage	11,773	10,491	30,629
Bone phosphates	21,526	24,881	40,882
Other phosphate materials	12,265	22,387	22,947
Total	55,585	77,994	107,059
All other fertilizers	15,815	23,668	36,951
Grand total	1,177,706	758,593	1,367,506

The Canadian Department of Mines has built a new peat manufacturing plant at Alfred, Ontario, where experiments have been carried on for some years with a view to the production of peat fuel. Up to the present the attempts to put peat fuel upon the market have not been successful, the adoption of artificial means of drying the peat rendering the operating expenses too heavy to admit of a profit. Latterly an investigation has been made of the air-drying methods successfully employed in Europe, and substantial improvements in the process adopted at Alfred have been effected. It is believed that the working cost has been sufficiently reduced to justify placing the output upon the market, and it is proposed to operate the plant with a view to the production of 20,000 tons per annum.

Imports of pyridine into the United States during May amounted to 16,007 pounds, which compares with 16,705 pounds for the corresponding month of 1927. The average price per pound for the May imports is 17.6 cents compared with 27 cents in May, 1927.

During 1927, imports of pyridine registered a big drop over incoming shipments during previous years, as will be seen from the following data:

	1924	*1925*	*1926*	*1927*
Quantity	608,980 pounds	789,077 pounds	743,283 pounds	135,692 pounds
Value	$268,782	$394,337	$366,161	$42,021

The United Kingdom and Germany are the principal shippers of pyridine to the United States.

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If your merchandise is not available for prompt local delivery in our territory, let us get together.

Thompson-Hayward Chemical Co.

KANSAS CITY -- HOUSTON -- DES MOINES
OMAHA -- ST. LOUIS
NEW ORLEANS

Another German Potash Combine

Hallesche Kaliwerke A. G. at Halle Saale, one of the smallest and still independent concerns in the German Potash Industry sold recently its sales quota of 7.6565 thousandth to the Salzdetfurth concern, according to the Department of Commerce. The quota which is allotted to the Salzdetfurth concern in the German Potash Syndicate increases by this purchase from 26.5563 thousandths to 34.2128 thousandths. It is planned to close the Hallesche Kaliwerke mines and refining plants towards the end of this year. "The whole transaction is another step in the rationalization program of the German potash industry.

The so-called Salzdetfurth-Westeregen-A schersleben concern, controlled by Disconto Gesellschaft, is one of the leaders of the Antiblock which presented a united front against the aspirations of the Wintershall concern to play a dominating role in the potash syndicate. The whole combined concern controls a quota of 216.69 thousandths of its own, in which Aschersleben is participating with 100.8141, Westeregeln with 89.3266 and Salzdetrfurth as mentioned above with 26.5563 thousandths. In addition to these quotas of its own, the concern controls part of the quotas of the Einigkeit and Mansfeld concern, bringing the total participation in the sales of the Potash Syndicate to 24 per cent., or almost one-quarter.

Exports from Canada of chemicals produced by the wood distillation industry, exclusive of charcoal, amounted in 1927 to over $3,000,000, an increase of more than a half million dollars over the 1926 exports. At the same time, imports of these commodities also increased. The following table shows the exports and imports of these materials during the years referred to:

Imports into Canada and Exports of Certain Chemical Products During the Calendar Years, 1926 and 1927.

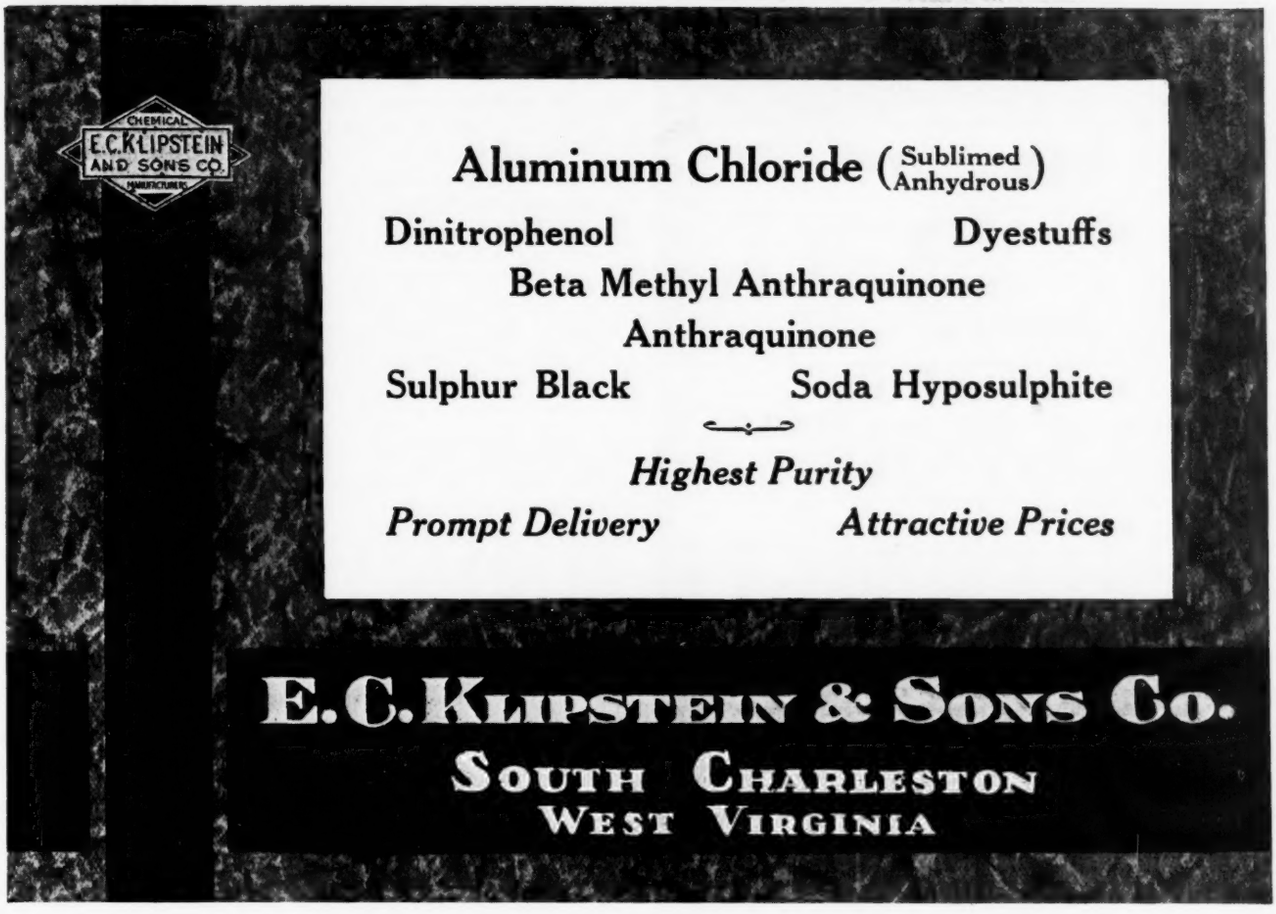
		1926		1927	
		Imports	*Exports*	*Imports*	*Exports*
Methyl hydrate	Gal.	56	37,196	58	47,026
	Value	$189	33,835	231	49,083
Charcoal	Value	$190,716	3,663	202,514	157
Acetate and amyl acetate	Value	$13,811	.....	57,979	.....
Acetate of lime	Cwt.	.....	55,317	.....	70,725
	Value	$4	161,150	.....	232,630
Acetic and pyroligneous acid	Gal.	3,839	.....	2,837	.....
	Value	$4,166	.....	3,765	.....
Acetic acid	Cwt.	.....	221,770	.....	277,531
	Value	.....	$2,089,339	.....	2,860,393
Formaldehyde	Value	$415	.....	220	.....

Production of wood distillates in Canada during 1927 was valued at $1,587,704, a decline of 8.5 per cent. from the corresponding figure for 1926, according to the recently issued annual report of Dominion Statistician R. H. Coats of the Dominion Bureau of Statistics. Eleven establishments were in operation in 1927, including five distillation plants. These 11 plants, representing a capital of $1,907,514, gave work to an average of 291 persons during the year and used materials worth $865,081. In 1926, the nine plants in operation employed an average of 255 workers and used materials worth $827,575 to make products having a selling value of $1,734,993. The value added by manufacturing was $722,623 in 1927 as against $907,418 in 1926.

During the manufacturing period of 1926-27 there was a total of 875 alcohol distilleries in Czecho-Slovakia. Of that number, 838 were agricultural and 37 industrial.

Total production amounted, according to the Department of Commerce, to 518,657 hestoliters of alcohol. Of the raw material, 142,757 metric tons of potatoes were used; in addition the industry worked 75,869 metric tons of molasses and 70,091 metric tons of beets.

Exports of creosote oil to the United States from Sault Ste. Marie, Canada, dropped from 392,609 gallons, valued at $50,900, during the quarter ended June 30, 1927, to 20,236 gallons, valued at $3,101, during the corresponding period of 1928, according to the Department of Commerce. The large orders of last year were not repeated.



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Condition of German Wood Industry

Of the two leading concerns in the German wood distillation industry one, the "Verein fur Chemische Industrie," closed the year 1927 with an increased dividend, reports Consul Hamilton C. Claiborne, Frankfort on the Main, Germany. The other, the "Holzverkohlung Industrie A. G. Konstanz," has declared no dividend for the past three years. This contract is explained by the fact that the "Verein" had maintained a cautious policy in the past and had accumulated ample funds, whereas the Konstanz concern, which is essentially a "holding company," is only now commencing the accumulation of reserves. The business report of the "Holzverkohlung Industrie A. G." for 1927 implies that the current year will likewise be closed without dividend. It is stated that the Company's condition in the past was one of "waiting and groping" which may well be taken as characterizing the entire industry of the dry distillation of wood, confronted as it is with the astounding recent developments in chemical technology. The narrowed field of industrial applications for charcoal, the synthetic production of methanol and acetic acid, and the competition of the coal tar industry in an ever widening range of products, has made the situation of the wood distilling industry very precarious indeed.

The Department of Commerce announces that, according to data collected at the biennial census of manufactures taken in 1928, 10,133,983 pounds of sulfur dioxide, valued at $687,855, was produced in 1927. This output, as compared with 8,861,341 pounds, valued at $635,738, produced in 1925, the last preceding census year, represents increases of 14.3 per cent. in quantity and 8.2 per cent. in value. This production was reported by four establishments—two in New Jersey, one in Virginia, and one in Wisconsin.

The following statement shows the production of sulfur dioxide as reported for each of the last three census years:

Production of Sulfur Dioxide: 1927, 1925 and 1923

	1927	1925	1925
Number of establishments	**1**/4	**1**/4	**2**/4
Pounds	10,133,983	8,861,341	6,575,995
Value	$687,855	$635,738	$414,049

1/ New Jersey, 2; Virginia, 1; Wisconsin, 1.
2/ California, 1; New Jersey, 1; Virginia, 1; Wisconsin, 1.

The coke oven installation at the Netherland mines, Emma and Hendrick, and the Maurits mine, when completed will have an annual output of the following by-products: Sulfate of ammonia, 28,000 metric tons; benzol, 14,000 metric tons; pitch, 30,000 metric tons; coal tar oils, 20,000 metric tons; and gas, 375,000,000 cubic meters.

The annual consumption of the Netherlands of sulfate of ammonia amounts to between 80,000 and 90,000 metric tons. The pitch production is sufficient to supply the domestic demands of briquets according to Vice Consul Eugene W. Nabel, Rotterdam, Netherlands.

In order to push the sales of synthetic calcium nitrate 100-kilo special bags for that fertilizer will be furnished by German producers free of charge to the buyer in the fertilizer year 1928-29, reports Commercial Attache F. W. Allport, Berlin. Based on present prices of such bags, which the customer had to pay for in previous fertilizer years, the actual reduction in the price of calcium nitrate amounts to 8 pfennig per kilo primary nitrogen. In other words, the farmer had actually to pay in the previous fertilizer year, bags included, 1.21 marks per kilo of nitrogen content in calcium nitrate, whereas he has to pay now for the same product, bags included, 1.13 marks per kilo nitrogen.

Hamilton Piece Dye Works, Paterson, N. J., files plans for a one-story addition to mill, 50 by 100 ft., estimated to cost about $21,000, with equipment.

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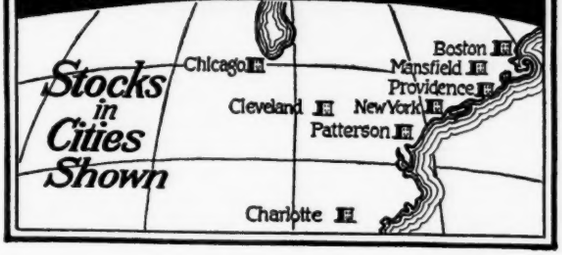

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Italy Appoints Chemical Commission

Italian Official Gazette of June 22 publishes Royal Decree No. 1292 of May 10, 1928, whereby the old Permanent Committee for the Italian Chemical Industry is dissolved and the formation of a special commission for the chemical industry is provided, reports Commercial Attache Mowatt M. Mitchell, Rome.

The members of the Commission will be nominated by the Minister of National Economy and will hold office for three years. The work and aims of the Commission are outlined as follows:

(a) To compile and keep up-to-date production statistics of the pharmaceutical and chemical industries with particular attention to raw materials, intermediate products, and by-products;

(b) To collect and disseminate information with regard to the condition and progress of the chemical industries in Italy and abroad and with regard to trade movement of chemical products at home and abroad;

(c) To study new processes and modifications of existing processes proposed in Italy and in other countries which may interest the chemical industry, making use to this end of the Chemical State Laboratories which will be chosen in agreement with the Ministry of Public Instruction;

(d) To suggest to the Government measures best adapted to encourage the growth of the Italian chemical industry and to further the co-operation of science with the chemical industry in accord with the aims of the National Research Counsel;

(e) To give advice on all measures to be enacted by the ministry of National Economy and other State administrations with a view toward facilitating the development of the chemical and chemical-pharmaceutical industries, trade in chemical products and supplies of raw materials for their manufacture;

(f) To make whatever investigations, research work, and inquiries in connection with the chemical industry which may be requested by the Minister of National Economy.

Furthermore, the Minister of National Economy is empowered to levy an assessment on chemical manufacturers in order to collect the funds necessary for research work by the Commission. It is made incumbent on all manufacturers to supply the Commission with whatever data they may ask in connection with their investigations. Furthermore, a special appropriation will be set aside for paying salaries to the members of the Commission and to the employees.

The previous existing Permanent Committee for the Chemical Industry will turn over to the new Commission all its records and files.

Centralized nitrate sales have been resumed in Chile and prices for the United States have been fixed according to the Department of Commerce.

Nitrate selling by the Nitrate Producers' Association has been started again and the resumption introduced another era of centralized selling at fixed prices. The producers have agreed to quote nitrate prices f. a. s. nitrate ports for the United States and countries other than those of Europe and of Mediterranean ports, increasing from 16s. 3d. in September to 16s. 7d. in March, 1929, the latter price to remain stationary throughout June.

Nitrate shipments to European and Mediterranean ports are to be delivered through the customhouses at sellers' risk and at different prices for each country. As a result of the discussion regarding these arrangements, nitrate sales during August were very slow.

Production of nitrate in July by the 69 operating oficinas was 2,643,000 metric quintals as compared with 1,270,000 metric quintals in July, 1927. Exports of nitrate were 1,927,000 quintals as compared with 2,360,000 in the same month of 1927. World stocks of nitrate are approximately 13,763,000 metric quintals as against 12,561,000 at the same time last year.

Diamond Alkali Co., Pittsburgh, announces that it will begin production of liquid chlorine within the next month.

Kuhlmann Report Shows Building Progress During the Past Year

The recently published report for 1927 of Etablissements Kuhlmann, the leading chemical firm in France, stated that a chlorine liquefaction plant and three mechanical sulphate of soda furnaces were installed at the Loos works. The first nitric acid unit at the Madeline plant has been doubled and two new units, each of 20 tons, are being erected. Rapid progress is being made in the manufacture of nitrate of lime. The Nantes factory has been completely reequipped and modernized both as to plant and storage capacity. The old sulphuric acid plant has been modernized by the installation of mechanical pyrites furnaces equipped with the Cottrell process for the removal of dust from the gases.

Active steps were taken to secure adequate supplies of ammonia for future needs. In equal conjunction with the mining company of Marles a firm was established with the title Societe de Produits Chimiques Marles-Kuhlmann with a capital of 20,000,000 francs to utilize the coke oven gases at Marles for the production of synthetic ammonia. The new plant has been constructed very rapidly and commenced operations at the end of last April. In Belgium the Kuhlmann concern has subscribed to the increase of capital of the Societe des Fours a Coke of Selzaele (20,000,000 Belgium francs) to allow this latter firm to construct a synthetic ammonia plant. The Kuhlmann combine will receive deliveries of ammonia from this new firm under very favorable conditions. It is expected that production will be commenced at this plant before the end of October, 1928. The report mentions the formation of the Societe de Produits Chimiques Courrieres-Kuhlmann with a capital of 8,000,000 francs, to manufacture synthetic methanol. A factory is being constructed and should be completed before the end of the year.

Canada Our Largest Chemical Buyer

Canada supplanted the United Kingdom as the leading purchaser of American chemical products during the first six months of 1928, taking $14,206,000 worth as against $11,869,000 worth by the mother country, according to A. H. Swift, of the Chemical Division, Department of Commerce.

This is the first time that England has taken second place, chiefly because of the decline in prices of rosin, turpentine, sulphur and other crude and semi-manufactured materials, the Department stated. Germany held third, Japan fourth, and France fifth places. Belgium, which has been buying in greater amounts during the last few years, continued her expansion. In the Latin American countries, Argentina, Cuba, and Mexico were as usual the leaders.

Europe, the largest consumer of the crude and semi-manufactured materials of rosin, turpentine and sulphur showed a slight drop in percentage, almost entirely on account of price decline, yet continued to take the largest part of the trade, 37 per cent or $34,000,000, for the first half of 1928. North and Central America followed with 27 per cent. or $25,500,000, and the Far East with 22 per cent. or $20,000,000. South America purchased at about the same rate with 12 per cent., or $11,000,000, and Africa two per cent. or $2,000,000.

After the large amounts shipped to France and Germany in 1927, these two countries fell off somewhat during the current half year, but Australia, Belgium, Czechoslovakia, Denmark, Italy and Norway all increased their requirements. Sales to Poland were particularly large, purchases doubling the average for the entire previous year. This was primarily explainable by explosives shipments, although more than $100,000 worth of numerous chemical products were also sent there.

Belgium is a growing customer of American chemical products and buys appreciable amounts of all classes. American dyes have become popular in this country and more than $100,000 of coal tar dyes were sold there during the first half of 1928.

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German Benzol Output Up 50%

The German Benzol Association of Bochum estimates its production of benzol in 1927-28 at 50 per cent. more than the year previous, reports Trade Commissioner William T. Daugherty, Berlin. Increased production by the Association was partly accounted for by entrance into its membership in 1927 of Vereinigte Stahlwerke A. G., while coke production was increased with improving conditions in the iron and steel industry.

Despite increasing production of benzol, the demand is so great, especially by the automotive industry employing mixtures of gasoline and benzol as fuel, that imports increased over 100 per cent. in 1927, compared with 1926. Germany's 1927 benzol imports amounted to 131,000 metric tons, of which 54,000 tons originated in the United States, against 64,000 tons in 1926 (14,000 tons from the United States), and 44,000 tons total from all countries in 1925, the United States at that time shipping negligible quantities.

The Benzol Association's delivery contract was extended on May 6, last, for ten years. Benzol Verband and Benzolvereinigung des Ostens concluded a cartel treaty in August, 1927.

Production of crude methanol during the month of July, based on reports by the entire industry to the Department of Commerce, was 517,696 gallons, as compared with 510,629 gallons in June and 592,368 gallons in July, 1927.

Production of acetate of lime in the United States during July totaled 9,305,217 pounds, while shipments amounted to 13,251,841 pounds, and there remained in stock at the end of the month 20,553,401 pounds. Correspondingly, production in Canada is given at 442,808 pounds, and shipments, 882,396 pounds, while 2,332,841 pounds remained on hand at the close of the month.

Stocks of crude methanol at the end of July amounted to 288,414 pounds, while 277,077 pounds of methanol were at refineries and in transit. Canadian production of crude methanol during July totaled 14,885 pounds, and at the end of the month stocks were 38,485 pounds, while 66,518 pounds were at refineries and in transit.

Patent No. 1681895 for a method of refining oils, is issued August 21, to Louis Burgess, on Application No. 651435, filed July 13, 1923. Board of appeals of the Patent Office held that, where appellant applied the fuming sulfuric acid treatment to the oils and followed it with an alcohol and caustic soda treatment; and the prior art disclosed a method including frequent treatments with fuming sulfuric and a final treatment with alcohol, and treatment with caustic soda, but which included and intermediate steam distillation treatment; and appellant alleged that valuable by-products were secured by his system whereas such products would be destroyed by the distillation process, appellant's method involved invention.

According to local German papers, a British concern is negotiating with the Soviet authorities concerning the exploitation of the Solikamsk potash deposits, reports Consul H. C. Claiborne, Frankfort on the Main, Germany. The firm in question is already actively engaged in other undertakings in Russia and proposes to open in a short time four new mines in the Solikamsk district. It is stated that the British concern is backed by a New York banking house and by some unnamed other company which is also interested in the Lena gold fields.

Canadian exports of asbestos in July totaled 22,054 tons, valued at $1,007,036, against 10,424 tons, valued at $778,970, in June and 11,496 tons, worth $757,061 in May. Asbestos exports in 12 months ended July, 1928, totaled 260,355 tons, valued at $10,811,370, against 262,124 tons, worth $10,414,500, reflecting relatively greater demand for better grades of asbestos. Output last fall was severely curtailed due to flood conditions.

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Aluminum Sulfate As a Spray

There has been a considerable growth in the popularity of aluminum sulfate as an ingredient for orchard spray materials by Nova Scotian agriculturists, reports Consul Erik W. Magnuson, Halifax. This chemical has been used in the Province in small quantities in an experimental way with good results for four or five years. Much larger quantities were employed during the present season. It is said that the beneficial action of aluminum sulfate is similar to that of lime sulfur while the objectionable characteristics of the latter are largely eliminated. Experts believe that consumption will expand. The aluminum sulfate is not used alone but is mixed with other spray ingredients such as lime suflur, calcium aresenate, and nictone. The exceptional demand during the current season created a temporary shortage. Aluminum sulfate is produced by a Montreal firm and imported from the United States and Great Britain. A list of the principal firms handling spray material in Nova Scotia and more detailed information concerning the use of aluminum sulfate can be had by accredited American firms upon application to the Chemical Division.

The Chemische Fabriken in Billwaerder (Hamburg) vormals Hell and Sthamer, which alone remained in competition with the I. G. Farbenindustrie in the production of potassium nitrate and double-refined sodium nitrate, after dissolution of the Saltpeter Convention on January 1, 1927, has arranged for the sale of these products through the German Nitrogen Syndicate, of the I. G. The Hamburg company however, continues to produce fertilizers from waste materials, and is in the superphosphate market, through its recent acquisition of the Norwegian phosphorus plant Jan in Fredericksstad. Whether retirement of Hell and Sthamer from the fixed nitrogen fertilizer market in favor of the I. G. has any connection with negotiations for a broader international nitrogen pact, with the I. G. taking the initiative, is not yet established according to Trade Commissioner William T. Daugherty, Berlin.

Kalkammon the new German fertilizer is produced by the Ruhr Chemie A. G. by uniting ammonium chloride with carbonate of lime, reports Consul Hamilton C. Claiborne, Frankfort on the Main. Kalkammon contains about 17 per cent. nitrogen and about 30 per cent. calcium carbonate. The price of Kalkammon is about 84 pfennigs per kilo of nitrogen content which is two pfennigs below that for ammonium sulphate. The value of the lime is included in the price. Kalkammon is recommended by the manufacturers for all plants with the exception of tobacco. This new fertilizer has been developed to supply the farmer with a substitute for ammonium sulphate. It is not intended that the use of Kalkammon should correct acid soils that require lime treatment. It is said, however, that the use of Kalkammon will prevent establishing an acid condition.

Representations have been made to the British Board of Trade, under section 10, paragraph 5, of the Finance Act, 1926, to exempt the following chemicals from import duty: Butyl chloral hydrate, celtium oxide, dyprosium oxide, ehbium oxide, europium oxide, gadolinium oxide, holmium oxide, lutecium oxide, samarium oxide, terbium oxide, thulium oxide, and ytterbium oxide. The above paragraph specifies that any article which is found not to be made in sufficient quantities within the British dominions to cope with consumption, shall, on representation from a consumer, be exempted from the duty.

Du Pont Rayon Co. plans construction of rayon plant of eight units, representing total investment estimated at $46,000,000, for the Waynesboro, Va., site optioned by company. A single $5,000,000 was originally planned. Proposed development, it is said, will be largest in world when completed and will put Virginia ahead of any other state in the world in rayon output.

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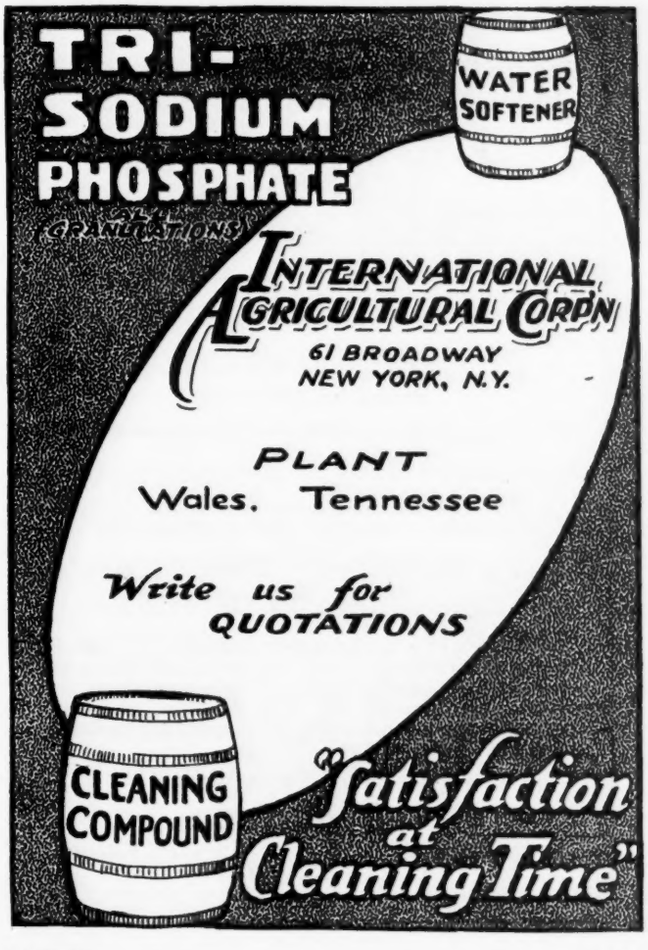

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Study Made of German Nitrogen

The "Institut fur Konjunkturforschung" (Institute for Research on Business Conditions) has recently devoted its attention to the problem of the market outlook for nitrogen fertilizers and the possibility of increased consumption of such fertilizers by German agriculture, reports Consul H. C. Claiborne, Frankfort on the Main, Germany. The Institute places the possible increase in the use of nitrogen in Germany at 28 kilos of effective nitrogen per hectare and estimates that this increase would result in additional 2,000,000 tons of grain crops. As an example, if sulphate of ammonia is used, the possible increase is 200 kilos of fertilizer per hectare which is equivalent to 40 kilos of pure nitrogen, or 28 kilos of effective nitrogen. These figures are average for the entire cultivated area in Germany, but certain districts may require more or less additional fertilizers than is figured for the whole country. The same may be said of individual farming properties and sections thereof. Improvement of crops by the use of nitrogen fertilizers is not only as regards the quantity but also with respect to quality. It is stated that during the crop year 1926-27 the maximum of intensity in the use of nitrogen was reached only in a very few cases.

Factory production of fats and oils (exclusive of refined oil and derivatives) during the quarter ended with June was reported by the Census Bureau as follows: Vegetable oils, 390,523,630 pounds; fish oils, 10,307,576, pounds; animal fats, 551,737,286 pounds, and greases, 96,478,916 pounds, a total of 1,049,047,408 pounds.

The most important item of production during the second quarter was lard, with a total of 441,714,404 pounds, followed by linseed oil, 179,532,207 pounds; tallow, 108,432,812 pounds; cottonseed oil, 94,827,252 pounds; cocoanut oil, 64,806,786 pounds, and corn oil, 29,576,988 pounds.

The production of refined oils during the quarter included 168,973,633 pounds of cottonseed, 62,571,634 pounds of cocoanut, 2,368,739 pounds of peanut, 26,511,507 pounds of corn, 2,384,512 pounds of soya bean and 5,942,227 pounds of palm kernel.

Public Service Commission, Albany, N. Y., approves new freight rates as follows:

New York Central (East) extract (dry tanning) carload from New York and Brooklyn stations; Long Island City (Pidgeon street terminal), New York (including lighterage), Kings Bridge, Morris Heights, High Bridge, Melrose Junction, Westchester Avenue and Port Morris to Balck Rock, Buffalo and East Buffalo, 28.5c reduction, 3.5c per cwt. Effective September 20.

New York Central (East) flaxseed and linseed in bags or in bulk, carload, minimum weight 50,000 pounds (on shipments in bulk rate will apply when shipped in lots of not less than 4,000 bushels) from New York (including lighterage) to Amsterdam, 14c reduction, 2c per cwt. Effective September 18.

The Bureau of Customs announced September 1 that it had amended Article 614 of its regulations of 1923 to permit the gauging of imports of molasses within 20 days after draining from shipping tanks. The regulations have provided for the gauging within a 10-day period, but it was explained orally by the Bureau that extension of the time seemed advisable to allow for a settling of the molasses after being drained.

Classification of phenanthrene as a coal tar product and dutiable, therefore, under Paragraph 1549 of the Tariff Act of 1922, has been ordered by the Bureau of Customs. There had been a difference of opinion among appraisers, the Bureau said in its announcement, and the decision now reached makes the practice uniform throughout the customs service.

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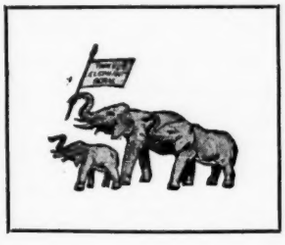

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U. S. July Imports of Rayon

July imports into the United States of rayon yarns, threads and filaments amounted to 658,949 pounds valued at $625,879, it was stated August 31 by the Department of Commerce. Italy was the largest source with shipments of 277,170 pounds valued at $253,196. The imports of rayon waste reported by the Department for July totaled 274,130 pounds valued at $24,287, while yarns made from waste amounted to 43,984 pounds worth $35,220.

Large quantities of coal tar crudes and intermediates, such as toluidine and dimethylaniline are used by the Swiss dye industry. The largest imports of these materials come from Germany and some are also received from France, Austria, Great Britain, and Belgium. The value of imports from the United States in 1926 was about 21 per cent. of the total. The plants of the Basel dye concerns manufacture practically all of the dyes produced in Switzerland and their products constitute one of the principal Swiss export items. The value of the exports of aniline and other dyes in 1927 reached $13,810,100 reports Vice Consul Albert W. Scott, Basel.

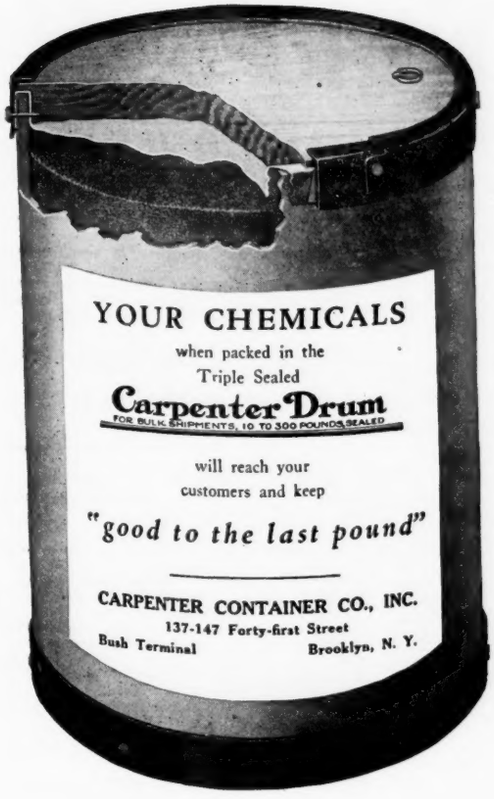
Following a steady increase during the past four or five months in the dye trade of Central and South China, business in dyes is now experiencing a slight summer lull, states Trade Commissioner Frank S. Williams, Shanghai. Dye transactions with North China are showing an evidence of some improvement and appear to have recovered following the recent military disturbances. However, foreign and other dye concerns are showing reserve with reference to the extent of return to steady operating conditions, and in most cases are insistent upon releasing cargo only in treaty ports or for exportation.

Notwithstanding an apparent decrease in the French consumption of superphosphates, new producing plants are being installed in France, reports Assistant Commercial Attache Daniel J. Reagan, Paris. The annual report of the "Union Espagnole de Fabriques d'Engrais" states that among the three companies in which the Union is interested, the "Cie. Regionale des Engrais du Berry" and the "Cie. Regionale des Engrais de l'Orleans-Beauce" have completed the installation of their plants at Issoudun and at Voves, and these are now commencing production. The "Cie. Regionale des Engrais de Normandie" is also installing a plant for the production of sulphuric acid, superphosphates, and chemical products.

The Caustic Soda and Soda Ash Trade of Java is controlled by Great Britain and the United States. Imports of British caustic soda during 1927 comprised 2,309 metric tons and of soda ash 960 tons. United States furnished 1,593 tons and 171 tons respectively. Germany supplied 186 tons of caustic soda and the Netherlands 149 tons of caustic and 66 tons of ash. It s estimated that 80 per cent. of the 4,260 tons of caustic soda mported into Java during 1927 were consumed in the sugar mills and that the bulk of the caustic soda imported into Outer Possessions is used in the petroleum refining industry.

A Swedish company has recently announced that it will start making ice out of some of the liquid carbonic acid at present produced in its plant. After watching the use of dry ice in the United States for about three years, the Swedish company now believes that there will be a market for the same product in Sweden as soon as the consumers have become convinced of the advantages of the solidified carbon dioxide, or "dry ice," over the natural ice mostly used heretofore.

The cost, in the United States, of producing precipitated barium carbonate exceeds the cost of production in Germany, the principal competing country, the United States Tariff Commission has reported to President Coolidge in a report just made public by the Commission. Accordingly, the President upon the indings of the Commission, proclaimed a 50 per cent. increase in the tariff, making the duty 1½ cents per pound.



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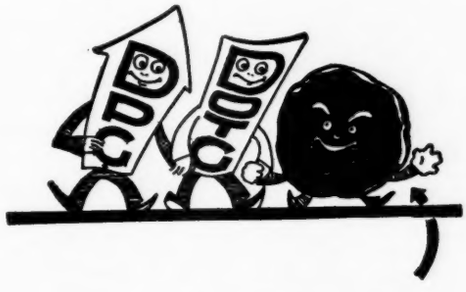

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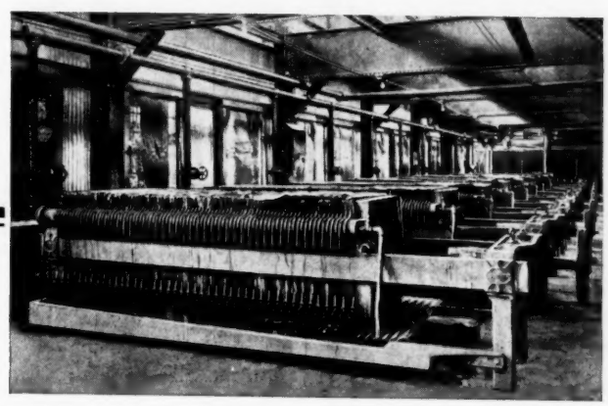

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Control of Chilean Nitrate Plants

An attempt has been made to ascertain the nationality of the companies or individuals mentioned in the Nitrate Producers Association's list of owners of Chilean nitrate plants, reports Consul Robert R. Bradford, Iquique.

The list contains the names of 152 plants which make up the nitrate industry. While absolute accuracy as to the nationality of the various owners can not be guaranteed, it is believed that the following table offers an approximately correct statement (in percentages) of the nationality of the controlling interests in the Chilean nitrate industry. It should be noted that the percentages given apply solely to ownership of the various plants. They have no reference to production.

The following table shows by percentages the nationality of the owners of the 152 nitrate plants in the nitrate producing region of northern Chile:

Nationality	*Per cent.*	*Nationality*	*Per cent.*
Yugoslav,	32.2	Chilean-Peruvian	2.6
British,	18.4	American-Chilean-British	2.6
British-Chilean,	9.2	Peruvian,	1.9
Chilean,	8.5	French, Chilean,	1.3
Spanish,	7.2	Yugoslav-Chilean,	1.3
German,	5.2	Bolivian,	0.6
American,	4.6		
Spanish-Chilean,	3.9		

The close of the first six months of 1928 showed a more favorable balance of trade in British glycerin than for the corresponding period of 1927, as regards quantity, but a slight falling off in value of net exports, and was not equal to that of 1926 in either quantity or value. Gains made in crude glycerin were more than offset by losses in the distilled product. Comparative figures are given below:

	Six Months Ended June 30					
	1926	*1927*	*1928*	*1926*	*1927*	*1928*
	Cwt.	*Cwt.*	*Cwt.*	*Value*	*Value*	*Value*
Crude glycerin						
Exports	20,932	15,501	19,072	£60,870	£49,204	£58,740
Imports	1,662	15,378	8,482	4,707	58,853	29,574
Net exports	19,270	123	10,590	56,163	–9,649*	29,166
Distilled glycerin						
Exports	75,277	57,628	68,282	310,878	290,211	263,643
Imports	20,932	15,501	19,072	8,074	7,191	16,917
Net exports	54,345	42,127	49,210	302,804	282,020	246,726

*Import value exceeded export value.

The outstanding features of the world trade in caustic soda during the first half of 1928 were the gains made by the United Kingdom and Germany and a drop in the United States shipments. The positions of these countries and Belgium are shown in the table that follows:

Exported from:	*6 mos. 1928*	*6 mos. 1927*
	Metric tons	*Metric tons*
United Kingdom	60,571	55,353
United States	21,240	24,002
Germany	8,568	4,231
Belgium	1,235	1,107

French figures for the first half of 1928 are not available. Exports for the first four months of the year, however, indicate a slight reduction to 10,463 tons, as compared with 10,933 tons exported in the first four months of 1927.

The total amount of tar made in France in 1927, according to technical press reports was 487,000 tons—233,000 tons from gas works and 254,000 tons from coke ovens. The consumption was 40,000 tons in excess of this, the deficit being made up by importations from the Saar Districts. The total quantity of benzol made in France last year was reported as 61,200 tons of which 12,700 tons came from gas works and 48,500 tons from coke ovens and tar distilleries.

Shipments, alleged to be consigned to fictitious addresses, made by F. Simpson Co. and the Alleghany Chemical Co., New York, and labelled "lacquer solvents", are seized by New Haven police and found to contain ethyl alcohol valued at $16,000.

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French Coal Tar Products Up in 1927

Coal by-products in France in 1927 totaled 487,000 metric tons, as compared with 465,000 metric tons in 1926, reports Consul D. C. Woods, Paris, France. The output from the gas works decreased while that of the coke furnaces increased substantially during the past year. The production of tar by the gas plants and six cokeries of the Saar basin in 1927 amounted to 116,000 metric tons, as compared with 105 metric tons in 1926.

Among the derivatives of tar, creosote has been produced in superabundance in France. As the railroads have been unable to absorb the total, licenses have been granted for the exportation of the excess. Creosote has been especially sought in the United States. A French group "Producers-Exporters" has been formed to follow the foreign markets and develop outlets for the surplus production.

Statistical Statement 1-8200, issued each month by the Bureau of Foreign and Domestic Commerce now records imports of butyl acetate. Prior to March, 1927, this product was not separately enumerated in import statistics. The following table shows the amount and value of butyl acetate entered for consumption during each month from March, 1927, to May, 1928, inclusive:

1927	*Pounds*	*Dollars*	*1927*	*Pounds*	*Dollars*
March	72,707	9,820	December,	312,144	47,483
April,	482,057	75,123			
May,	540,812	66,864	*1928*		
June,	701,392	89,616			
July,	705,025	94,197	January,	337,302	45,525
August,	371,846	52,586	February,	434,737	58,910
September,	906,965	127,397	March,	41,223	5,579
October,	453,483	60,980	April,		
November	412,129	55,433	May,	337,068	45 590

The Bureau of Foreign and Domestic Commerce has recently received work that the Egyptian Government will receive tenders for the supply of stabilized chloride of lime required by the Public Health Department, Ministry of the Interior, for the period of one year from May 1, 1928, to April 30, 1929. The requirements amount to 20 metric tons and tenders will be received by the Director of Stores, Public Health Department, Cairo, up to 10 a. m. on October 2, 1928.

Phosphate rocks quarried on the property of Consolidated Mining and Smelting Co., Montreal, and sulphuric acid, a by-product of their smelting, are being utilised by that company in the manufacture of a new phosphate fertilizer. Experiments on government and other experimental farms have shown that the fertilizer is valuable for grain growing, and the company now counts on this product as a substantial prospective source of income.

Approximate world output of manganese ore with metallic content of 30% or more was 3,318,773 tons during 1926, according to Department of Commerce. Of this total 93% was produced by five countries which consume annually but a comparatively small portion of their own output—40% by Russia, 30% by India; 11% by Gold Coast, 8% Brazil and Egypt 4%.

First Lignite Gas Works to be constructed in Germany.—Deutsche Erdoel A. G., Berlin, Braunkohlen und Brikettindustrie A. G. Berlin, Julius Pintsch A. G., Berlin, and two other concerns have jointly formed a new company entitled, "Lignite Gas Co. (Ltd.)" (Braunkohlen Gas G.m.b.H., Berlin) with the intention of constructing gas works for the gasification of lignite in various German cities.

An American company is reported as having decided to erect a plant in Germany for the production of ethylene glycol under patents of the I. G. Farbenindustrie A.-G., and in co-operation with the latter concern.

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"WE"—Editorially Speaking

NITROGEN

The selection of this stubborn color element for the first economic symposium of the American Chemical Society was a fortunate one. The Nitrogen situation presents a present day problem. It concerns the chemical manufacturer very vitally and in a number of different ways. It presents the almost unique spectacle of an important chemical product whose market position is determined by the interplay of several distinct sorts of demand and of supply from natural by-product and manufactured supplies.

Nitrogen has its place in the basic farm problem. It plays an important part in International politics. It is becoming an increasingly interesting and valuable raw material in a number of new chemical manufacturing operations.

The extremely complicated significant economics of Nitrogen are set forth clearly in the abstracts from the papers read at this symposium, which are printed in another page of this issue. There are but few chemical industrialists who are not in some way concerned with this problem. Not even if there be no direct contact, this study of the business aspects of this important branch of the modern industry is a veritable object lesson.

The subject was handled by an extremely able group of leaders in various branches of the chemical business. The facts and figures they present clearly indicate the broader aspects of the Nitrogen problem. Their conclusions sum up experienced thought on Muscle Shoals and solution to the farm problem, the market of by-products, the effect of new processes on established chemical products and other broad basic questions which are before the industry to-day. No man in the chemical industry, be his interests technical or commercial, can read these papers without profit and such discussions from the purely economic point of view will doubtlessly have an established place in future chemical society deliberations. They serve a double purpose in that they furnish the chemist with a practical first hand contact with the "dollars and cents" aspect of applied chemistry, and they bring home to the industrialist the big constructive work which this organization of American chemists is accomplishing.

The farmer, the woman, the clergy, labor, the wets and the drys; East and West, North and South; city and country; pink and yellow; German, French, and 110% Americans—every group in the country sticks its oar into the whirlpool of the political campaign. Only the business man is supposed to hold aloof and yet many issues at stake very vitally concern him. As far as any organized effort goes, the business man is virtually inarticulate, and it is the rule of the business press—as long ago it used to be the rule of the religious and agricultural press—to keep hands off political subjects.

Probably, this is sound enough because we have already managed to interject into our political situation sufficient disturbing extraneous non-political matters. To add an organized industrial element, as such, would probably not improve the situation. After listening to both of the candidates acceptance speeches, one of the regulars at the salesman's luncheon round table at the Chemist's Club summed up rather bitterly a strictly business point of view of the campaign when he said, "I do not know who is going to be elected, but this is certainly going to be a wonderful country to live in in the next four years."

Except for Governor Smith's reference to Muscle Shoals as a fertilizer plant to help solve the farm problem, chemicals have not yet become an issue in the campaign, and we have unfortunately no glorious grievance to nail to our masthead. This is a pity. We should relish a crusade for a bigger and a better and a more profitable chemical industry in America through the medium of political aid. We should thoroughly like to write a few real lively editorials about government in business, the starving chemists, and equalization fee for all over-produced chemicals, and an amendment to the Constitution compelling every bilious and unpatriotic American citizen to consume three teaspoonful of sodium bicarbonate daily and a minimum of four ounces of magnesium sulfate weekly. Believe us, we would conduct no whispering campaign.

Little is known of the early stages of the development of the helium gas industry. In his description of the work that has been done, Mr. Bottoms tells of the interest which was created in the gas by its use as a vehicle of war. In this respect helium is not unlike some of our other best known chemicals. It is reassuring to learn from the figures presented that the prospective supply of helium within our own borders, is sufficient to take care of any increase in demand for scores of years to come.

We have had several articles during the past few months citing the manufacturers viewpoint on the loaning of American money to foreign countries. Mr. Dulles' article, which from its contents can be taken as outlining the bankers' point of view, seems quite convincing and thorough.

Too much attention cannot be paid to safety in the handling of acids from tank cars. In reprinting this chapter from the very useful manual which the Merrimac Chemical Company is preparing, we believe that it will be of great value to readers, for it is very descriptive in every detail.

There probably is no one better suited to discuss the question of health and hazard control than M. H. Haertel. He has fully lived up to his past reputation in the contents of his article and were the recommendations made by Dr. Haertel followed out, they would go a long way toward the solution of this perplexing problem of health control. While on the surface Dr. Haertel may appear to be championing the employers' cause, a more careful survey of his writing will show that he has presented an unbiased view of conditions as they are to-day.

OCTOBER FEATURES

The forthcoming meeting of the Chemical Section of the National Safety Council will be held in New York next month and we have arranged for the publication in full of two or three of the leading articles dealing with chemical safety conditions. Using previous years as a criterion of what we may expect, these papers should be replete with information of the work that has been done in the year since the last meeting.

Mr. Alan A. Claflin of L. B. Fortner Company is preparing a series of articles for us on a retrospect of chemical process developments during the past several years, the first installment of which will appear in our October issue.

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